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PRACTICAL GYNECOLOGY

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A PHYSICIAN'S

PRACTICAL

GYNECOLOGY

BY

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TO

DR. S. HENRY

WHOSE SUCCESS AND REPUTATION AS A GYNECOLOGIST,
THOUGH HE WAS A GENERAL PRACTITIONER, HAVE BEEN A SOURCE
OF PRIDE AS WELL AS A STIMULUS
AND INSPIRATION TO HIS SON, THE AUTHOR, THIS BOOK IS
AFFECTIONATELY DEDICATED

PREFACE

This little volume has been prepared at the suggestion of both medical students and physicians, and is intended as a practical guide in gynecology for them. Its object is:

First. To present the essentials of gynecology in a brief, concise, and clear manner to medical students.

Second. To give the general practitioner a safe and practical guide for the diagnosis and treatment of the ordinary gynecological cases he will meet.

Third. To help the physician quickly recognize those cases which demand the early attention of the specialist so that they may receive the benefits offered by modern gynecology. Many a mind will be saved, many a life preserved, and many a sufferer relieved if modern treatment be applied early, and this can be done only by the general practitioners, into whose hands these patients first come, making an early diagnosis more or less complete, and urging the proper treatment.

How well I have succeeded in reaching my ideals must be left to the judgment of my readers.

I wish to acknowledge my indebtedness to Drs. Thomas and Munde and to Dr. Garrigues, who have so kindly allowed me to use such cuts from their works as I might choose. Also to Dr. H. W. Orr, of the Review Publishing Co., whose thoughtful suggestions and hearty co-operation have been so helpful, and whose intelligent and careful supervision has presented the work in so attractive and pleasing a form.

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A PHYSICIAN'S PRACTICAL GYNECOLOGY

CHAPTER I

DEFINITIONS AND GENERAL REMARKS

1. **Definition.**—*Gynecology* (jĭn-ē-kŏl′-ō-jĭ) is that branch of medicine which treats of the malformations, diseases and injuries peculiar to women.

2. **Importance.**—It is a most important department of medicine, because—

a. Of the large number, great variety and seriousness of these disorders.

b. More than half of the human race are females.

c. Of the social prominence of women.

d. The wonderful strides of modern medicine render many of them curable; and

e. Of the vast possibilities in their prevention.

3. **Things to remember.**

a. A fair proportion of women go through life without requiring the services of a gynecologist (jĭn-ē-kŏl′-ō-jĭst).

b. Many of women's diseases, easily curable when properly treated early, may, by neglect, become curable only by difficult and serious operations, or even wholly incurable.

c. A large proportion of women's disorders are preventable.

d. Virgins should rarely be subjected to vaginal examinations.

e. Women may have other diseases, as well as gynecological ones.

f. Take time, be careful, deliberate and thorough in making your examinations. When necessary use all of the means at your disposal and make repeated examinations, even including examinations under an anesthetic, before arriving at a diagnosis.

g. Never introduce an unclean sound or other instrument into the uterus.

4. **Terms defined.**

a. Disease. Abnormal activity in living tissue.

b. Malformation. Any departure from the normal formation of a part.

c. Injury. The abnormal condition of a part resulting from force.

d. Etiology (ĕ-tī-ŏl′-ō-gy). The cause or causes of malformation, disease or injury.

e. Pathology. The physical change produced in any part by disease.

f. Diagnosis. Opinion as to what ails the patient.

g. Prognosis. Opinion as to how the patient's ailment will terminate.

h. Treatment. The means used to relieve the patient, or to restore to a normal condition or to health.

5. **Some general causes for women's diseases.**—It is often a matter of great surprise that so large a proportion of women should have female trouble, and the question arises among the laity as well as the profession, "Why is it that so many women have these diseases?" I shall not presume to give the causes or the prevention of all the diseases of womankind, but since I believe many of them can be prevented by simple, rational and thoroughly practicable means, and since it is the aim of

every true physician to prevent disease whenever he can, and since the physician is the only competent person in the community to instruct the people in their habits and their hygiene, therefore I wish to emphasize some of those causes which seem to me most potent in producing these diseases, and urge that you rise to the opportunities you have and meet your obligations to the public, that the readily preventable diseases now so common among women shortly may be less prevalent.

FIRST. **Improper parental care of girls,** and this may be divided into—

(*a*) *Overmental development.*—That is to say, too great stress is laid upon the education of the girls. They are sent to school too young; they are crowded in their studies and their music until their nervous systems are oversensitive, and they are overburdened with the cares of life ere they have reached their teens. I doubt if any girl should ever be sent to school before eight years of age, and many would be better to be kept from school until ten years of age.

(*b*) *Under-physical development.*—Parents are so anxious about the mental growth or about the earning capacity of their girls that they almost forget their bodies. Parents generally mean well, and really desire the best thing possible for their girls, but ignorantly, thoughtlessly, or through force of circumstances, they neglect the body, urge studies, the indoor life or the work in the store or factory, seeming to ignore the important fact that girls, to have robust and healthful bodies fitted for the stern and essential duties of womanhood, must have an abundance of outdoor life and physical exercise with sufficient recreation during this period of growth. Growing girls should not be shut up for long hours in the house, the school, the store or the factory. Give the girls a chance to develop their bodies in an easy, natural

way, and then they will come to maturity prepared for its responsibilities.

(*c*) *Ignorance of puberty.*—How few girls come to womanhood with any knowledge of themselves! How many indiscretions and injudicious, not to say absolutely injurious things are done through ignorance of this very important change in their lives! That endometritis, endocervicitis or displacements are thus sometimes inaugurated which lead to dysmenorrhea or other serious ills, I have no doubt. I have thus placed these causes under the one general heading, Improper Parental Care, for it is the duty of the parents to guide, direct and instruct in all of these matters, and they in turn look to the physician.

SECOND. **Imprudence during menstruation,** and this is subdivided into the following four causes:

(*a*) *Undue exposure.*—However much a woman might be subject to cold drafts, lack of proper clothing or wet feet at other times, surely at the menstrual period these indiscretions are dangerous. Suppressio menses is apt to occur, and this may result in metritis, pelvic peritonitis or endometritis.

(*b*) *Over-exertion.*—While menstruation is a normal physiological process, yet it is undoubtedly true that women, constituted as they are, had better do their hard work and perform their more active duties at other than their menstrual times.

(*c*) *Cold water or other injections.*—Though not a common practice, still women, for some cause or other, do sometimes use injections at the time of menstruation, not knowing the danger of suppressing the flow, and the evils which may follow.

(*d*) *Sexual intercourse.*—Every woman should be taught the danger of regurgitation of blood through the Fallopian tubes, and a consequent hematocele, as well as

chronic metritis or endometritis as a result of intercourse at this time.

THIRD. **Improper clothing.**—Under this heading I would suggest:

(*a*) *Clothing too tight.*—This is a common cause listed in our text-books, and while it is not very important, still it should not be forgotten.

(*b*) *Clothing hanging from the waist.*—It cannot be denied that reasoning upon purely mechanical principles it must be injurious to the position of the pelvic organs and to the circulation of blood in them for the heavy weight of the clothing to be constantly pressing the abdominal organs downward upon them. It is unnatural and abnormal, therefore injurious. Let the clothing be supported from the shoulders.

(*c*) *Too light clothing about the pelvis and thighs.*—These parts are naturally subject to great variation in their blood supply, hence the importance of their being well protected by flannel and abundant clothing to prevent abnormal congestion and inflammation.

FOURTH. **Preventing conception.**—(*a*) *Vaginal injections of cold water.*—Cold water injections into the vagina are not always improper, and in some cases are useful, but should not be used after intercourse, as they may produce in time a chronic endometritis or hyperplasia of the uterus.

(*b*) *Withdrawal.*—This practice may seem entirely harmless, but it is not. For leaving the woman unsatisfied and the internal organs congested it tends to develop reflex nervous troubles as well as chronic inflammations, and is therefore injurious.

FIFTH. **Abortions.**—(*a*) *Accidental and unavoidable.*—This class of abortions often leads to invalidism, because the women do not realize the importance of having a physician and of carefully following his direc-

tions, and therefore do not take proper care of themselves after the misfortune. It is just as important that all of the product of conception be removed and that the woman remain quiet in bed a reasonable length of time (a week or ten days) after an abortion as it is that she do so after a normal labor. Many cases of menorrhagia, metrorrhagia, subinvolution and displacement date from an accidental abortion which has been improperly cared for.

(*b*) *Criminal abortion.*—Whether criminal abortions be produced by drugs taken internally, which bring on a violent and unhealthy congestion of all the pelvic viscera, or whether they be produced by instruments in the hands of the patient or some unprincipled doctor, they nearly always leave marks. Many women die every year in the United States from the immediate effects of criminal abortions. Many more have pelvic abscess, pus-tubes, chronic endometritis, salpingitis, ovaritis, subinvolution, lacerated cervix and displacements. Women do not know of these physical evils which result from this crime, and the doctors should instruct them. They do not know that it is murder to interfere with the product of conception before the fifth month—in fact they believe there is no life until motion is felt—and the doctor should teach them the moral guilt attaching to this practice: and when they understand that it means murder and nothing less than murder in the first degree, as well as that some form of pelvic disease is almost certain to result, many of them will refrain, and thus a multitude of diseases be prevented.

SIXTH. **Improper Confinements.**—Under this heading I place the following:

(*a*) *Infection*, by the patient herself, the nurse, or midwife, or the doctor. Women do not realize the danger of putting unclean fingers or cloths into the

vagina or about the vulva, which have many raw or readily absorbent places which very quickly take up any kind of infection within reach, and often work disaster and havoc in these cases. So the patient, nurse, midwife or doctor should be careful lest puerperal fever, chronic endometritis, cystitis or other disease remain to mark their work and lack of care.

FIG. 1. FERGUSON CYLINDRICAL SPECULUM.

(*b*) *Torn parts not repaired.*—The perineum, when torn, is ordinarily very easily repaired, and should always be stitched up within a few hours of the delivery. If this is not done, then subinvolution of the vagina and perineum is apt to occur, and the proper support is not given to those parts dependent upon a sound perineum. A woman does not always suffer immediately from the effects of a torn perineum, but sooner or later there will usually develop some unpleasant symptoms due to a perineum much torn, and therefore as a prevention it should at once be repaired. If the cervix be torn it is not important to repair it immediately unless it be torn back through the circular artery, when the profuse post-partum hemorrhage will demand it. But a torn cervix will demand more tonics and oxytocics, and a repair within three or four months to prevent endometritis, displacements, menorrhagia and cancer.

(*c*) *Uterus not properly emptied.*—If part of the after-birth or membranes remain, sepsis, chronic endometritis, subinvolution and menorrhagia may follow.

(*d*) *Too tight bandaging.*—I believe in the properly

applied binder, but it is by no means essential, and a woman is better without the binder unless well fitted. It is an easy matter to apply the binder so firmly that the heavy body of the uterus is thrown down into the hollow of the sacrum, and a flexion may easily be produced which is not so quickly cured.

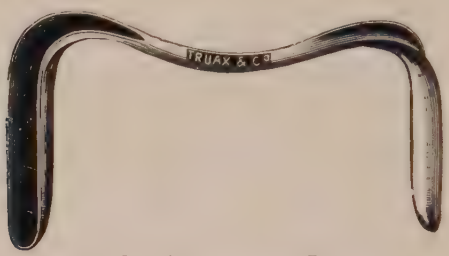

FIG. 2. SIMS' UNIVALVE SPECULUM.

(*e*) *At work too soon.*—Many unfortunate mothers seem almost compelled to be up and in charge of their household affairs very quickly after confinement, and yet even these, if they realized the great importance of giving nature a chance to restore the parts to something like a natural condition before expecting them to bear

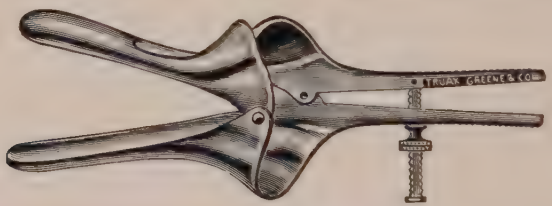

FIG. 3. MILLER'S BIVALVE SPECULUM.

the strain of such burdens as belong only to normal parts, would devise some means of securing it. But I refer more especially now to those who are so situated that they can take the proper time for their confinement. These women can save themselves from nervous troubles of various kinds, catarrhal inflammations, displacements and subinvolutions, with their attendant evils, if they

will take from six to ten weeks in getting up from confinement before engaging in their usual active duties.

(*f*) *Failure to nurse the offspring.*—It must be clear to every thoughtful person that the nearer we come to nature's plan the better it will be for us in physical things as well as moral. Since, therefore, it was intended

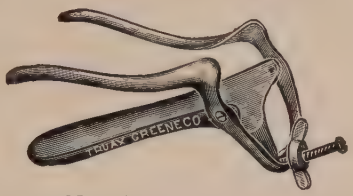

FIG. 4. NOTT'S TRIVALVE SPECULUM.

that women should nurse their children, it will be best for them to do so. The more thorough and complete the involution of the uterus, the better it is for the woman. Now the nursing of the child is nature's stimulant to assist in this important change. Hence, I urge that the failure of so many women to nurse their children is an important factor in causing female diseases.

SEVENTH. **Impure and excessive sexual intercourse.**—Under this heading I place:

FIG. 5. UTERINE SOUND.

(*a*) *Chancroids*, which, though rather common among a certain class, are rarely seen in the better walks of life, and the method of their prevention is well known.

(*b*) *Syphilis* (sĭf′-ĭ-lĭs) may primarily affect women in the higher walks of life, but its most direful results are seen in the numerous premature births which may seriously impair the health of the woman.

(*c*) *Gonorrhea* (gŏn-ō-rē′-à), however, is a most treacherous disease in women, for it may involve the vagina, the bladder, the uterus, the Fallopian tubes and

the ovaries without their suspecting that their husbands have been untrue, or have married while suffering from an uncured or chronic gonorrhea. Many women have suffered from sterility, others have gone to the operating table for extrauterine pregnancy, pus-tubes, pelvic abscess or diseased ovaries because their husbands have

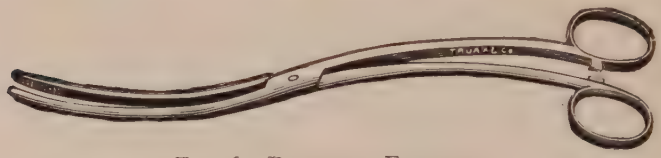

Fig. 6. Dressing Forceps.

thus infected them. This cause is all too frequent. It can and should be prevented. Let these facts be understood and appreciated by the people, and let a common standard of morals be observed by requiring purity and chastity of both men and women, and thus a great number of diseases peculiar to women will be prevented.

6. **Considerations as to diagnosis.**—The diagnosis is made by using the various means at our disposal to secure the data upon which to base an opinion. The more careful and thorough our investigations, therefore

Fig. 7. Curette.

the more reliable our opinions or diagnosis. While it is not necessary in all cases to go so fully into them as indicated by the following outline, still in many cases it is, and it is always well to have in our minds a complete form to be followed more or less closely as the case may require for its full elucidation.

First. *Family history.*—Father, mother, brothers, sisters, uncles and aunts condition of health, ages, and causes of death.

Second. *Personal history.*—(*a*) Age; married or single; how many children, and their ages; how many abortions, and when did they occur; how long sick; of what does patient complain. (*b*) Condition of alimentary tract, nervous system, kidneys, etc.

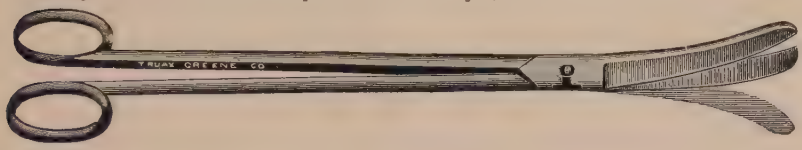

Fig. 8. Scissors.

Third. *Physical signs*, discovered, first, with the patient in various positions, as (*a*) lying upon her back, legs and thighs extended; (*b*) lying upon her back, legs and thighs flexed, dorsal; (*c*) lying upon her left side and chest, left arm behind her, thighs and legs flexed with right over-riding the left, Sims; (*d*) knee-chest—knees and breast upon table, thighs perpendicular, and knees apart; (*e*) standing—erect, feet apart. Second, by use of various means: (*a*) inspection, with or without speculum and microscope; (*b*) palpation—digital, manual and bimanual, abdominal, vaginal, vesical and rectal; (*c*) Percussion—mediate and immediate; (*d*) Ausculta-

Fig. 9. Tenaculum.

tion—mediate and immediate. Third, by aid of such instruments as: (*a*) Specula, cylindrical, Ferguson's (Fig. 1); univalve, Sims' (Fig. 2); bivalve, Miller's (Fig. 3); trivalve, Nott's (Fig. 4); (*b*) Uterine sound (Fig. 5); (*c*) Dressing forceps (Fig. 6); (*d*) Curette (Fig. 7); (*e*) Scissors (Fig. 8); (*f*) Tenaculum (Fig. 9); (*g*) Stethoscope; (*h*) Microscope and other laboratory tests. Fourth, with and without anesthesia. Fifth, by repeated examinations, and when necessary exploratory operations.

CHAPTER II

SOME GENERAL CONSIDERATIONS

1. **The physician's office.**—Every physician who expects to do any gynecological work should have his office fitted up with certain things which are essential to successful work in this line. His entire furniture, with his apartments, instruments, etc., may be more or less elaborate, according to taste, means and surroundings, but there are a few well-defined things one should have in order to do properly the simplest gynecological work. There must be:

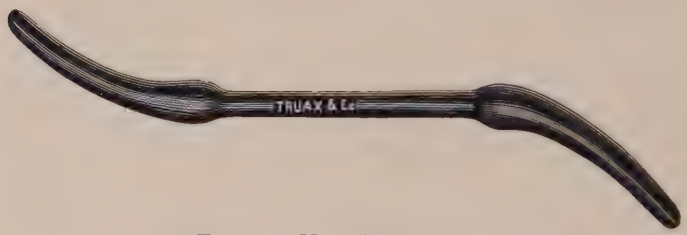

FIG. 11. HANK'S DILATOR.

a. Table easy to mount and readily accessible to a good light, with a sheet or cloth to cover the patient.

b. Small cabinet containing basin; bivalve speculum; Sims' speculum; uterine dressing forceps; uterine sound; uterine tenaculum; uterine applicator and syringe; Hank's dilators (Fig. 11); jar carbolic oil; jar boroglyceride and 10 per cent ichthyol-glycerine; jar powdered tannin; jar powdered boric acid; bottle Churchill's iodine; bottle carbolic acid 95 per cent; bottle sol. nit. silver 20 grains to ounce; also one of 60 grains to ounce; bottle Monsel's solution; bottle alcohol; absorbent cotton and lamb's wool; ball of clean white cord; towels;

pessaries; and water with facilities to boil it. Numerous other articles might be added and will be supplied as the practitioner gains experience, but with these he may at least make a good beginning.

c. Handbag containing steel dilators (Fig. 12), sharp curette, uterine irrigator, double uterine vulsellum

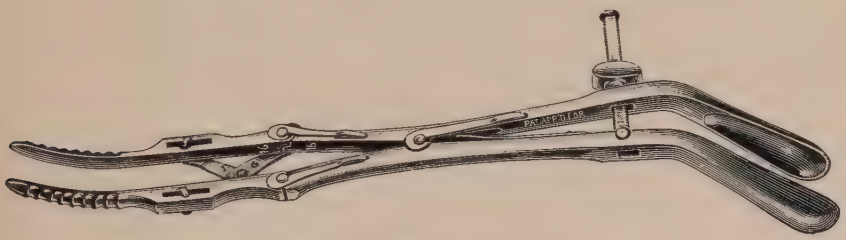

FIG. 12. STEEL DILATORS.

(Fig. 13), bottle of carbolic acid, chloroform, alcohol, fountain syringe, fluid extract ergot, creolin and Morrison's pad (Fig. 14). Of course when called out to do a curettement or control a uterine hemorrhage, he will need to add the other necessary instruments and dressings from his cabinet. If he be abundantly able to afford it, these extra instruments may be in duplicate and largely increased in number.

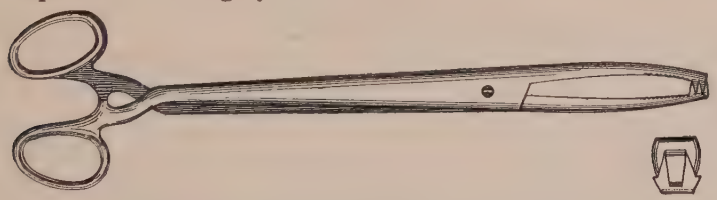

FIG. 13. DOUBLE UTERINE VULSELLUM.

d. Surgical bag containing small case of knives; scissors, straight, curved, on the flat, blunt, sharp pointed; dozen hemostats; one-half dozen assorted needles, curved and straight; clamps; needle-holder (Fig. 15); perineum needle; catheter; Shepherd's crook tenacula; tissue forceps; probe, director; bottle chromi-

cized assorted catgut; silk-worm gut; iodoform gauze; plain sterile gauze; rubber tubing for drainage; operating gowns; sterile towels; nail brush; ether; chloroform; alcohol; carbolic acid. Other necessary instruments and dressings may be added from the cabinet, the hand-bag, or, preferably, duplicated.

FIG. 14. MORRISON'S PAD.

2. **Anesthetic.**—Of all anesthetics suitable for the gynecologist, ether is the safest and should have the preference, unless it is positively contraindicated by diseases of the kidneys or lungs, when chloroform has the preference, so that the operator should generally be supplied with both.

3. **Antiseptics.**—Thorough cleansing with brush and an abundance of hot water is most important; then bichloride solution 1:500 or 1:2000 where it can be used, is allowable and fairly efficient. Pure carbolic acid, when possible, is absolutely reliable and safe when properly used. Two to 4 per cent solution is of some value

in certain cases and may be used for washes and for the hands. A 1 to 2 per cent creolin solution is mildly antiseptic and astringent, therefore desirable in some conditions.

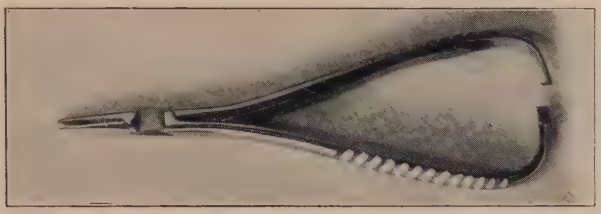

Fig. 15. Henry's Needle-Holder.

4. **The parts affected,** in which the gynecologist specially is interested are:

a. External parts.
1. Mammæ.
2. Vulva. Mons Veneris, Labia Majora, Labia Minora, Clitoris, Meatus Urinarius, Vestibule and Bulbs, Vulvo-Vaginal Glands, Hymen, Fossa Navicularis, Fourchette.
3. Perineum.
4. Anus.

b. Internal parts. Vagina, Uterus, Fallopian Tubes, Ovaries, Urethra, Bladder, Ureters, Rectum.

5. **How the various subjects will be treated.**—We will take up first the several parts in the order above named, giving the anatomy and physiology of the part, then its malformations, its diseases and neoplasms, and finally the injuries to the part, thus dealing fully with and completing each part before we take up another.

CHAPTER III

THE MAMMÆ.

The mammary glands are compound racemose glands accessory to the generative organs, and since they have their normal function and full development only in the female, and since their diseases are almost peculiar to the gentler sex, therefore no work on gynecology is quite complete without giving proper consideration to them.

Anatomy.—Normally there are two of these glands situated one on either side of the sternum extending laterally from about the sternal margin to the axillary line, and reaching from the third to the sixth rib vertically. Each gland is made up of fifteen or twenty lobes, whose ducts (the milk ducts) converge from the circumference to the nipple, which occupies almost the center of the external surface of the gland. The lobes are composed of small lobules which are supported or bound together by firm fibrous tissue. The ducts are lined with mucous membrane, which at the nipple is continuous with the skin. Besides these distinctive structures the breast contains abundance of fat, blood-vessels, nerves, and a liberal supply of lymphatics. Thus constituted the breast lies upon the pectoralis major muscle, and is rather intimately connected with it, for the superficial fascia of this muscle, which is the continuation of the superficial fascia of the neck, divides at the margin of the mammary gland into two layers, one passing in front of the gland and the other going behind it, thus firmly fixing the gland in its position. Numerous fibrous processes pass backward into the gland from the portion of the sheath which goes in front.

It is very important to remember that the lymphatics from the nipple and outer half of the breast go to the axillary glands, while those from the inner portion go to the mediastinal glands. It is also true that from the deeper portion of the breast some lymphatics penetrate the pectoral muscle and communicate with the mediastinal glands. The function of the gland is to secrete milk and supply the new-born child with nourishment.

MALFORMATIONS

1. **Absence of the mammary** gland in the female is rare, but sometimes occurs. There is no treatment for it.

2. **Rudimentary** development in a full-grown woman is more common, but it is usually associated with imperfect development of the other sexual organs, especially of the uterus and ovaries. No treatment avails anything unless the uterus and ovaries can be developed by early attention.

3. **Multiple glands,** or polymastia, are not so uncommon. It is said that the beautiful queen Anne Boleyn lost the affection of King Henry because he discovered upon her person a supernumerary breast. Sometimes as many as ten secreting glands are found. They may be located upon the anterior thoracic wall, along the axillary line, or even upon the thigh.

Treatment.—All of these supernumerary glands or nipples should be removed whenever found, and the girl left in as nearly a normal condition as possible.

DISEASES

1. **Fissured nipple** is apt to occur as the result of nursing. A slight abrasion is produced, possibly not carefully attended, and soon develops into a very painful or deep sore which, becoming infected, leads to mastitis

and abscess. During the last month of pregnancy the woman should be taught to daily bathe the nipple in alcohol and water, equal parts; and by carefully pulling out the nipple and working it gently between the fingers, harden it and thus prepare it for the infant. After the baby nurses let the milk be wiped off and the nipple cleansed each time with boiled water and a clean cloth. When a fissure is present, it will be very painful to the mother for the child to nurse, and the crack or fissure may be easily seen. Here the treatment must be prompt and radical. Let the nipple be thoroughly cleansed with hot water, then dry it and touch with the solid stick of silver. Let the child nurse by protecting the breast with a shield, and see to it that the breast is entirely emptied and the nipple cleansed each time. A good ointment to apply after cleansing is tannic and boric acid, 20 grains of each, in one ounce of vaseline. This may be wiped off before the child nurses. The solid stick may be used again in a day or two if necessary, but if well done once, early in the case, it will not often need to be repeated.

2. **Acute mastitis,** or inflammation of the breast, may occur at birth, at puberty or during lactation. The first two are not common, and require no further care than a cold compress and firm pressure with adhesive plaster or bandage. The inflammation most commonly found is that of lactation, and occurs usually from infection along the milk ducts or lymphatic channels, as from a fissured nipple.

The symptoms are pain, heat, swelling, hardness, and later redness. A duct becomes more or less occluded, and a lobe or two fills up with milk, which increases the trouble. This may increase until the whole breast is involved, and the patient has what is popularly known as "caked breast," which may go on to suppuration.

Treatment consists first in the above suggested pre-

ventive treatment, keeping the nipple clean and quickly healing fissures or abrasions, and seeing that the breast is well emptied either by the baby or by artificial means. When the breast gets hard and cannot be emptied in the ordinary way, make an ointment of equal parts of iodide of lead ointment and mercurial ointment, and have that freely rubbed into the breast, working from the circumference toward the nipple for about fifteen minutes every three or four hours until the breast is emptied and softened. When suppuration occurs this may be quite superficial or deep, but in either case it is very important to open freely, but make the incision to radiate from the nipple toward the circumference so as to be less likely to injure the ducts. (See Fig. 18.) Keep the abscess well washed out every day with 2 per cent carbolic solution, a little piece of gauze in the wound, and a firm compress upon the breast. If several abscesses form, open them all in the same manner and keep them well cleaned out, and no occasion will arise to amputate the breast as is sometimes done when this treatment has been too long neglected.

3. **Chronic mastitis** is not very uncommon, may be found in the single as well as the married, in one or both breasts, and is most frequent between forty and fifty years of age. The inflammatory exudate between the lobules becomes organized into firm connective tissue and may so obstruct the ducts as to make retention cysts. The lobules become hard, nodular, and there are severe neuralgic pains in the breast. The diagnostic points in the early stage to differentiate this trouble from malignant disease are:

(1) It is more apt to occur in both breasts.

(2) It does not involve or adhere to the skin.

(3) It enlarges and becomes more tender during menstruation.

(4) It improves or remains stationary.

(5) When still in doubt make an exploratory incision, remove the nodule, drop it into a solution of alcohol and water, equal parts, and send it to a competent microscopist for examination.

Treatment.—The iodide of potash, five or ten grains, three times a day, in essence of pepsin, one dram, after meals; or Fowler's solution, five drops, in water after meals, with thoroughly rubbing into the breast ointment of idodide of lead and mercurial ointment, equal parts, once or twice a day, followed by the application of a bandage and compress, will give prompt relief.

Eczema and other skin affections of the breast are not materially different in the history and treatment from the same troubles occurring elsewhere in the body except that eczema may be confounded with Paget's disease, which is malignant; and, therefore, an eczema of the nipple which becomes chronic and does not readily yield to treatment should be looked upon with suspicion, and either deep curettement or a section of it made for microscopical examination. If malignancy is found, nothing short of a prompt, radical operation is justifiable.

Hypertrophy, lipoma, fibroma, adenoma, cystoma, tuberculosis and **syphilis** of the breast are all possible, and occasionally are found, but need no special description here, and are only mentioned in this connection to remind the student of their possible, though rare, occurrence.

Sarcoma and **carcinoma,** both being of a malignant character and more common, will demand our attention more fully. The first generally occurs before thirty years of age; the last after that age. The former are much more rare than the latter. Sarcoma does not adhere to the skin, while carcinoma quickly involves it. The axillary glands are not involved in the

FIG. 18. CARCINOMA OF BREAST.

(*a*) Shows the proper direction of every incision to be made in opening mammary abscesses. This form of incision gives free vent to pus, and being parallel with the milk ducts will do the least possible damage. (*b*) Shows the dimple in the skin and retraction of the nipple because the skin has become adherent to the cancerous tumor and is now involved in the malignant process.

This woman was 52 years of age, and had a tumor removed from the breast between the nipple and sternum about six months before she came under my care. Before the wound healed nodules occurred in the site of the former tumor. The disease has spread until now the breast is firmly fixed to the sternum. The axillary and supraclavicular glands are extensively involved, the patient very anemic, reduced in flesh and strength, and suffering severely both from acute pain and mental anxiety. Operation was discouraged, but insisted upon by patient and her friends. After full explanations of the impossibility at so late a date of removing all of the disease, the operation was done after Halsted's method. The breast was removed from the sternum outward, carrying the breast, fat, and glands out into the axilla and removing all thoroughly. The supraclavicular space was opened later and these glands and as much fat as possible were removed. The skin was brought together with catgut as well as possible, but owing to the wide removal there was necessarily left a large raw surface which was allowed to heal by granulation. Owing to the extreme weakness of the patient before operation, we used hypodermic injections of salt solution, about one quart every four hours for one day following operation. Patient made a good recovery, was free from her pain, anxiety, and worry, gained in flesh and strength steadily.

former, but are in the latter. Sarcoma grows more rapidly than carcinoma, is softer, skin more shiny and red, and may be mistaken for an abscess. Carcinoma may follow an injury. There is at first a hard nodule which grows slowly, soon involves and puckers the skin, retracts the nipple, adheres to the fascia and ribs beneath, becoming fixed while the axillary glands become enlarged. Both have shooting or lancinating pains, and show late cachexia and metastasis to internal organs.

Treatment.—The early radical operation is the present-day treatment for both of these growths of the breast. Sarcoma rquires the removal of the entire breast, and is not likely to return; but does not call for removal of axillary or subclavicular glands, while carcinoma requires this part of the work to be thoroughly done, and all of the fat removed in these spaces as well as the removal of so much of the pectoral muscles as lie beneath the breast. And further, if the sarcoma should return in or near the cicatrix, repeated removals are more apt to result favorably in the end than when the trouble is carcinoma. Since Halstead's operation has given the best results, and has led to more extensive work by other operators, I prefer to give his operation.

The arm is extended at a right angle to the patient's body and firmly held by an assistant. An incision is made beginning over the head of the humerus, and is made to circumscribe the entire breast, meeting the first part of the incision some two or three inches within the point of its commencement. The triangular tip now covering the axilla is dissected off, and the upper, sternal and lower part of the incision is carried down to the ribs and the bleeding points quickly caught with forceps. Now starting at the sternal margin, dissect breast and muscle and fascia away rapidly, taking lymphatics out

along the pectoral border with these muscles and follow carefully into the axilla, dissecting fat and glands cautiously away from the important blood-vessels and nerves until this space is clear. This should all be done whether the glands are involved or not in carcinoma. If these glands are involved then the supraclavicular space should be opened and those glands and the fat there found, removed too. Clamps may now be removed, any important bleeding points tied with catgut. The skin margins may be brought together as nearly as possible with catgut or silk-worm gut, and this may be more effectually accomplished, if desired, by loosening up the skin flaps so as to slide them closer together. This is not essential, however, for the wound now left will heal rapidly by granulation. It may be well to put a drainage tube in the axillary space and drop it through an opening in the skin flap, leaving it forty-eight hours to provide for oozing here. A large gauze dressing may now be put over the wound, the arm firmly bandaged to the side, and the forearm over the breast, and the patient put to bed. This dressing need not be disturbed for a week, except to remove the drainage tube, which should be left projecting sufficiently to be reached readily, unless fever or excessive oozing should require it. At the end of a week it is important to dress the wound aseptically, especially if there has been much raw surface left, and the sutures should now be removed. The arm should be bound to the chest for another week or two, until healing is completed.

At the first sign of recurrence repeat the operation, going wide of the growth, even two or three times, for thus sometimes has success finally crowned the gynecologist's efforts.

CHAPTER IV

THE VULVA

The vulva is composed of the following ten parts which go to make up the entrance to the genital tract in the female. (Fig. 19.)

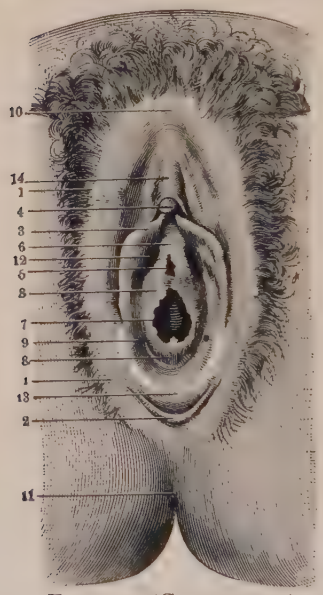

FIG. 19. (GARRIGUES.)

Virginal Vulva: 1, labia majora; 2, fourchette; 3, labia minora; 4, glans clitoridis; 5, meatus urinarius; 6, vestibule; 7, entrance to the vagina; 8, hymen; 9, orifice of Bartholin's gland; 10, anterior commissure of labia majora; 11, anus; 12, blind recess; 13, fossa navicularis; 14, body of clitoris (modified from Tarnier).

1. *Mons veneris*, which surmounts the symphysis pubis, is made up of the thickened skin, fat and large hair follicles which in the adult give growth to an abundant crop of hair.

2. *Labia majora*, which are two large lips or folds of skin containing considerable fat, extending downward from the mons veneris, surrounding the orifice of the vagina and uniting posteriorly to form the posterior commissure, while the place in front underneath the mons from where they spring is called the anterior commissure. These lips contain large sebaceous glands and hair follicles from which spring a more or less abundant growth of hair in the adult. These lips normally lie almost in apposition and form the ring or opening to the vulva.

3. *Labia minora*, two folds of much thinner structure than the preceding, made up of mucous membrane, lying one against the other inside of the labia majora, arising anteriorly just a short distance below the anterior commissure and passing downward and backward, are lost in the larger lips a little way above the posterior commissure.

4. *Clitoris*, an erectile organ, surrounded by the very beginning of the labia minora which forms a prepuce for

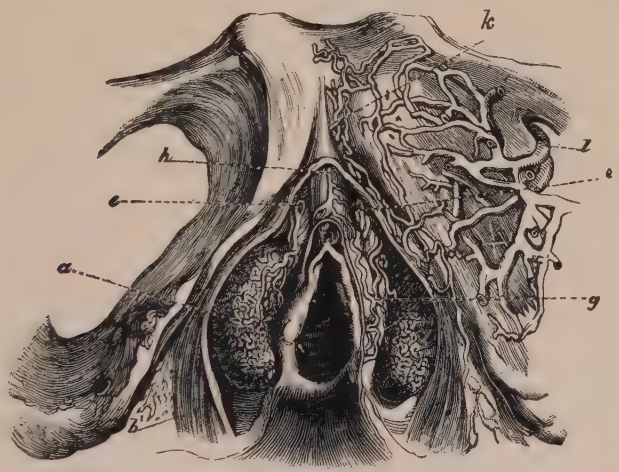

FIG. 20. (KOBELT.) Plexus of Veins of the Vestibule.

it and is composed of a glans, a body and two crura which are deeply buried, pass downward and backward along the rami of the pubic bones.

5. *Meatus urinarius*, which is the opening of the urethra situated between the labia minora just below the clitoris.

6. Vestibule and bulbs. If the labia minora be separated with the fingers, they will be seen to expose a smooth, triangular-shaped surface whose apex above marks the location of the clitoris, and whose sides are

formed by these labia, while the base is represented by the upper margin of the vaginal orifice. This triangular space, in about the center of which is located the meatus, is called the vestibule. Now the bulbs of the vestibule are two large venous plexuses lying deeply in the tissues on either side of this triangle, anastomosing freely around the meatus and clitoris by the pars intermedia and extending downward beyond the middle of the vaginal orifice. (Fig. 20.)

FIG. 21. (GARRIGUES.)
Vulvo-vaginal Gland. The labium majus and minus, the sphincter vaginæ muscle, and the bulb have been partly removed on right side in order to expose the gland: *AA'*, section of the labium majus and minus; *B*, gland; *C*, excretory duct; *C'*, stylet introduced into the duct; *D*, glandular end of duct; *E*, free end of duct; *F*, section of bulb; *G*, ascending ramus of ischium (Hurguier).

7. *Vulvo vaginal* or Bartholin's glands are two small racemose glands as large as a bean, situated deeply in the labia majora almost in contact with the base of the bulbs, and opening upon the mucous surface by a duct about three-fourths of an inch long just about where the labia minora are lost in the larger lips and outside of the hymen. (Fig. 21.)

8. The *fourchette* is the thin mucocutaneous fold formed by the labia majora coming together posteriorly and just in front of the posterior commissure.

9. The *fossa navicularis* is the little boat-shaped space formed by separating the labia majora posteriorly and putting the fourchette on the stretch.

10. The *hymen* is the thin membranous fold which, coming forward from the posterior commissure and running upward inside the labia minora, normally almost

closes the vaginal orifice, leaving only a small lunar-shaped opening at the upper part. When the hymen is ruptured, it gradually retracts and forms irregular and small soft nodules which surround the sides and posterior part of the vaginal orifice, called the caruncula myrtiformes. The vulva receives its blood supply from the superficial perineal branch of the internal pudic and the external pudic. The nerves come from the superficial perineal. The lymphatics go to the superficial inguinal glands, which of course are in communication with the deep inguinal and external iliac glands.

MALFORMATIONS

1. **Absence of parts** sometimes occurs by the parts not being differentiated in development, when there is a simple continuation of skin over pubes and anus. But this condition is found only where there is absence of other important parts, and the fetus is generally not viable, so the deformity is not of practical value.

2. **Hypospadias** (hī-pō-spā-dĭ-as) is that condition in which there is a failure of the union of parts in the median line so that there remains a deficiency in the floor of the urethra of greater or less extent. It can be repaired by a plastic operation if necessary.

3. **Epispadias** is the failure in union of the upper wall of the urethra, but is usually found in connection with a defect in the anterior abdominal wall, and the exposure of the bladder and openings of the ureters known as exstrophy of the bladder. This condition is more frequent than the preceding, and may be cured by a plastic operation when the child is nine months or a year old.

4. **Occlusion of parts** may exist where the labia minora are closely adherent, thus occluding or completely covering the orifice of the vagina; or the hymen may be

imperforate and thus occlude the orifice. In either case, after the parts are cleansed, in the girl before the age of puberty, it is a very simple matter to incise the hymen or the adherent labia, making a sufficient opening and keeping a small pledget of gauze in the opening for a few days, when healing will have taken place and no further trouble will remain. After puberty, however, when there exists more or less retained menstrual debris, the danger is greater and is in proportion to the length of time such menstrual fluid has been concealed, together with the amount of it. In all such cases let the patient be put to bed immediately after operation, and let the opening be made aseptically. Then have all of the blood-clots and other debris thoroughly washed out of the vagina, and have a boric acid douche, 30 or 40 grains to the pint of water, used two or three times a day until the vaginal mucous membrane is fully restored to a healthy state, which may take one or two weeks. If the menstrual blood has been forced back into the uterus and tubes until they have been long distended, then more care and possibly serious operation may be required.

5. **Supernumerary parts** may include double or triple labia on both sides, or a double clitoris. These conditions, unless very marked, usually are not noticed, and give rise to no trouble. However, if the mother calls attention to the abnormality, then it should be corrected by removing the extra part and the girl made as nearly normal as possible. No child should be allowed to grow up with any appreciable deformity which can possibly be corrected. I believe this to be a rule to which there are almost no exceptions.

6. **Pseudo-hermaphrodism** is that deformity in which the external parts closely resemble both the male and the female sex, while true or real hermaphrodism

(very rare) is that condition in which there is a double sex, a true ovary and a true testicle in the same person. The former is the more common and is due generally to a hypertrophied or abnormally large clitoris which may be mistaken for a penis, and then, if the vulva below represents the appearance of the female, the casual observer thinks the case one of hermaphrodism when it is so only in superficial appearance. The enlarged clitoris should be amputated.

DISEASES

a. **Inflammations of the vulva** or **vulvitis** may be classed under the following eleven heads:

1. Simple, where there is a catarrhal condition caused by uncleanliness, discharges from above, and chemical or mechanical irritation.

2. Specific, caused by the gonococcus and usually associated with specific vaginitis, etc.

3. Septic or phlegmonous, caused by any of the other more virulent infections.

4. Diphtheritic, caused by the Klebs-Loeffler bacillus.

5. Follicular, the chronic form of some of the preceding.

6. Chancroidal, caused by the infection of chancroids.

7. Syphilitic, caused by the poison of syphilis.

8. Tubercular, caused by the bacillus tuberculosis.

9. Lupoidal, caused by the infection of lupus.

10. Elephantoid, caused by the filaria sanguinis hominis.

11. Eczematous, caused by some irritating discharge from parts above, especially sugar in the urine.

Symptoms.—In *simple vulvitis* there is burning, possibly some itching, redness, slight or great tenderness,

increased secretion of mucous or mucopus and swelling of the part if the inflammation be acute. In specific, there are the same symptoms as those just given, and in addition there is more apt to be involvement of the urethra with painful and frequent micturition, as well as infection of one or both of the vulvo vaginal glands which often goes on to the formation of an abscess. In this case the microscope will always show the gonococcus; but it should be remembered that this is not positive proof of an impure or infectious sexual intercourse.

In *septic or phlegmonous* the symptoms are more severe and intense, swelling is greater, the deeper connective tissue is involved, there is more fever, pain, and a more rapid pulse.

FIG. 22. (THOMAS & MUNDE.)
Follicular Vulvitis.

Diphtheritic is found only in those who have or have been exposed to diphtheria; the membrane is found covering the parts, and the Klebs-Loeffler bacillus may be demonstrated.

The *follicular* is a chronic form in which the follicles and mouths of ducts are inflamed and occluded, thus giving the vulva a peculiar appearance. There are numerous inflamed points scattered more or less profusely over the mucous and cutaneous part of the vulva, showing at the openings of the glands or hair follicles; while the intervening surface is healthy. (Fig. 22.)

The *herpetic* presents the symptoms of itching or burning, and upon inspection shows groups of vesicles over different parts of the vulva; or if they have ruptured, there will be groups of irregular raw spots, very superficial, shiny smooth base, the vesicles at their bases having coalesced. There will be a slight watery secretion.

The *chancroidal* presents numerous isolations or points of infection; each one has a ragged base, and the edges tend to be undermined. There is a thick yellowish secretion, and the inguinal glands may early be involved.

The *syphilitic* has a single sore, first hard and nodular, then ulcerating slowly, the base continuing hard and firm like a bit of pasteboard when pinched between the fingers. The inguinal glands on the same side of the sore may be involved, but are not so apt to suppurate as in the preceding variety.

The *tubercular* is not common, but presents nodes or firm lumps in the skin of the vulva; after a time the nodule slowly breaks down and an ulcer is formed on its top which slowly but steadily spreads to surrounding parts. It has a cheesy, purulent debris and rarely heals without treatment. The tubercular bacillus is found upon examination.

The *lupoidal* is of slow and sluggish development, presenting nodules which after a time begin to ulcerate and break down at the base. The ulcer spreads slowly as in the preceding, but differs from it in that as it spreads to new tissue the older ulceration cicatrizes and the top or crown of the nodule is the last instead of the first to yield to necrosis or ulceration. The bacillus of tuberculosis is not found. (Fig. 23.)

The *elephantoid* variety, being a simple elephantiasis, has the history of repeated attacks of inflammation of the lymphatic channels with thickening of the skin and

connective tissue, each attack leaving a leathery feel to the tissues, and if they be incised a thin watery fluid constantly oozes away. The patient complains of this enlargement and the stiffness of the part.

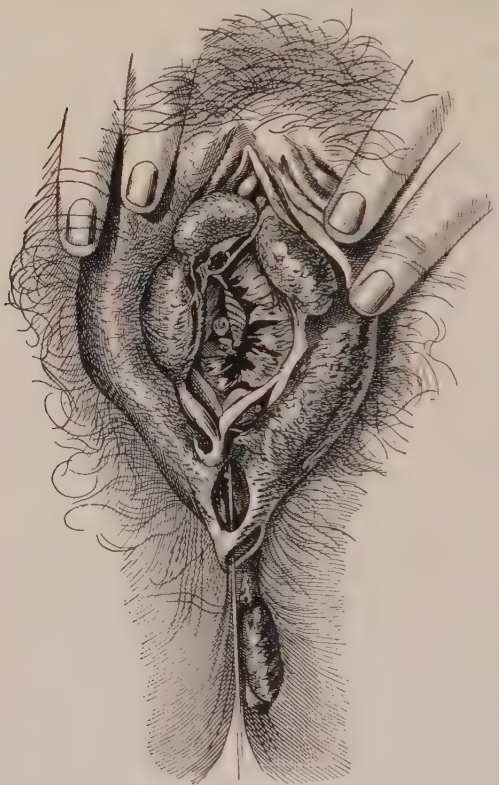

FIG. 23. (GARRIGUES.)
Lupus of Vulva (Häberlin).

The *eczematous* form of vulvitis presents the itching and burning in a marked degree, and there is decided redness, soreness, and water oozing from this angry surface.

Treatment.—The *simple* may be cured by cleanliness, bathing with lead and opium wash two or three times a day. If there is much inflammation, keep the patient in bed, open the bowels well with salines like Seidlitz powder or citrate of magnesia. Keep the lead and opium wash constantly applied to the parts on bits of absorbent cotton; or use an astringent wash of sulphate of zinc, 10 grains to a pint of water; or paint the vulva with a 5 or 10 per cent

solution of ichthyol in glycerine. The specific variety must be treated more energetically to prevent, if possible, its spread to urethra, Bartholin's glands and the vagina. Open the lips of the vulva well, and having gently cleansed them with sterile water, apply freely well up to the vaginal orifice a solution of nitrate of silver, 40 grains to the ounce of water, and bring in contact with all the infected parts. Then lay a pledget of absorbent cotton soaked in saturated boric acid solution between the labia and keep it there, changing every three or four hours for a fresh supply after bathing well in warm water. The next day use the silver again, only 30 grains to the ounce, and continue previous treatment. Here the bowels should be kept free by Epsom or Rochelle salts. Continue this treatment until all inflammation has been relieved. If the vulvo-vaginal glands become involved, an abscess is likely to form, and this will present great swelling of the labia affected, there will be tenderness, hardness, and a throbbing pain deep in the labium majoram of the side affected. The treatment for this condition is to open freely on the mucous membrane of the labium affected, low down to avoid the bulbs of the vestibule, wash out the pus, curette the cavity well, wipe out with carbolic acid, and leave a pledget of gauze packed deeply into the cavity. Change this dressing and cleanse well every forty-eight hours until the cavity has granulated and closed.

In some exceptional cases, where the urethra is involved, it is necessary to wash out this canal and make the nitrate of silver application there two or three times in a week. The urine may be kept bland and non-irritating with a teaspoonful of alkalithia in a glass of water three times a day, or with a five grain lithia tablet in a glass of water four times a day. It should not be for-

gotten that these cases are apt to be associated with a specific vaginitis and urgently demand the treatment appropriate for that affection as well.

The *septic or phlegmonous* demands energetic local treatment, cleaning raw surfaces which may have been the starting-point of the infection, and opening freely as soon as pus forms in the subcutaneous tissues and keeping the parts well drained and washed out with carbolized water, 3 per cent, or solution of bichloride of mercury, 1:2000, keeping the bowels well opened, and giving tonics and stimulants internally as may be indicated by the constitutional disturbances.

The *diphtheritic* requires for local treatment simple cleanliness and soothing applications like absorbent cotton wrung out of saturated boric acid solution, applied to the part. But internally it requires the same supporting and stimulating treatment demanded in every case of diphtheria.

The *follicular and herpetic* will get well with cleanliness and the application of mild astringent washes, as 3 grains sulphate of zinc to one ounce of water, or 1 dram of fluid hydrastis to one ounce of water, or the opening of each follicle or vesicle and touching its base with nitrate of silver stick or Monsel's solution.

The *chancroidal* is best cured by thoroughly cauterizing each sore with Paquelin cautery, nitric acid, chromic acid or acid nitrate of mercury, and then keeping the parts well cleansed and dusted freely each day with iodoform, aristol, calomel, subnitrate of bismuth or camphophenique.

The *syphilitic* needs only cleansing and dusting with one of the above powders. Here no cauterization is called for.

The *tubercular* should be freely curetted with the sharp curette and then the base and sides of each tubercle

cauterized with the thermo-cautery or pure carbolic acid, kept clean and dusted daily with iodoform.

The *lupoidal* is best treated by thorough and wide removal with the knife.

The *elephantoid* should be treated as the preceding, except wider excision is here demanded.

The *eczematous* specially needs to have its cause well looked after and removed if possible. Locally the following prescription is useful:

Ammoniated mercury - - grs. xx.
Carbolized vaseline, 10% - - ℥ j.

Sig.—Ointment. Rub in freely two or three times a day.

In these cases use soap and hot water for cleansing purposes once a day only. Some prefer the dusting powders, and it is true they will often answer and be more acceptable to patients than any form of ointment. Lycopodium, starch, rhubarb or bismuth may be thus used. Another good ointment is:

Hydrate of chloral - - grs. xx.
Vaseline - - - - ℥ j.

Sig.—Apply freely two or three times a day.

b. **Parasitic diseases of the vulva** are pediculosis pubis and scabies.

Pediculosis pubis is caused by the parasite pediculus pubis and comes usually from impure sexual intercourse. The symptoms are intense itching upon the mons veneris, the labia, lower abdomen and inner sides of the thighs, increased upon going to bed at night. Examination will reveal the marks of scratching, the eggs upon the hairs, and usually upon close examination one or more of the parasites will be found. The treatment is simple and efficacious. Rub the mercurial ointment well into the hairy parts about the vulva each night for only two or three times, and the trouble will rapidly disap-

pear. If it seems obstinate, the hair may first be cut short or even shaved, and then a very mild application made. If the skin has become raw on account of so much scratching, then rub into it the ointment of the oxide of zinc, which will quickly heal the skin.

Scabies differs in no particular here from what it presents in other parts of the body and would be associated with a similar condition elsewhere. Its treatment would be the same here as in other parts.

c. **The neurotic diseases of the vulva** are: (1) Pruritus; (2) nymphomania; (3) vaginismus; (4) kraurosis vulva.

PRURITUS VULVA simply means itching of the vulva, and is due to many causes, as diabetes, leucorrhœa, pin worms, as well as those just described. But all these are manifest local disturbances, and a visible cause is at hand which must be removed, while the neurotic form which we are considering is one in which there is no palpable cause, however closely we may scrutinize the case, and yet the itching is intense and persistent. The skin and mucous membrane may look perfectly healthy, but the itching may be widespread and extend even up into the vagina. Such cases occur only in the neurotic women whose health is already below par, but this condition increases the anemia, the constipation, the sleeplessness, the loss of appetite and the irritability.

Treatment.—Build up the general health with tonics. Blaud's pill or preferably elixir of gentian and iron, 1 dram in water after meals, with 5 grains of tincture of iron makes an efficient tonic. Bromide of potash or sodium, 20 grains in water at bedtime or even repeated two or three times through the day will be helpful in some cases. Sulphonal, 25 grains, or trional, 10 grains, will do better in others. Large cloths wrung out of hot water and applied to the vulva will do good locally. Of

all local applications, however, the application of pure carbolic acid to the parts is the most satisfactory. The urinary organs and bowels should be well looked after, and in this manner such cases are cured.

NYMPHOMANIA, or masturbation, is not common in girls and women like it is in boys, but still it sometimes occurs.

Etiology.—No special cause is known, but the child may be taught it by an unscrupulous nurse, or the irritation of pin worms or of vaginal discharges may cause the child to handle herself so that the habit may be established, or young women of strong passions and neurotic temperament may acquire the habit.

Symptoms.—It can be recognized only by seeing the patient practice it or getting her to confess it. There are no symptoms by which it can be diagnosed. If the clitoris is enlarged or irritable, the parts about it and the smaller labia somewhat reddened or roughened, or the patient specially sensitive about the clitoris, this disease may well be suspected, but a positive opinion can be formed only as above indicated.

Treatment.—Remove all causes of local congestion or irritation. Train the child and teach it good morals. Shame and educate the woman. If need be, bind the hands. Give iron quinine and strychnine, or Fellow's Hypophosphites in dram doses to the adult after each meal and proportionately smaller doses to the child. Monobromate of camphor, 5 or 10 grains, two or three times a day, or hydrobromate of hyoscine, 1-50 grain, two or three times a day, will be found useful in those anxious or even willing to be cured. In desperate cases, other means having failed, amputate the clitoris. The removal of the ovaries is not indicated unless the patient becomes insane when, besides removing the clitoris, the ovaries may be removed to prevent propagating her kind.

VAGINISMUS is a painful spasmodic contraction of the muscles of the vaginal orifice, occurring especially when any attempt is made to distend the orifice.

Etiology.—Generally there is found an inflamed hymen or vaginal orifice, an irritable urethral caruncle, a neuromatous growth springing from some point of the

FIG. 24. Vaginal Glass Plug.

vulva, especially the caruncula myrtiformes, or a fissure or ulcer may be present. Usually there will be found an underlying nervous condition of the patient.

Symptoms.—The attempt of coition or the effort to introduce the nozzle of the syringe, the finger or the speculum will bring on the painful spasm and rigid contraction of the muscles so that if the penis be already introduced it may be held so firmly as not to be easily withdrawn. There is not only firm contraction, but more or less intense pain is experienced by the patient. So violent are these contractions and so great the pain that some of these patients are thrown into opisthotonos by attempts at examination without anesthesia.

Treatment.—If possible locate and remove the cause. In mild cases at the beginning the parts may be painted with a 4 per cent solution of cocaine, and then as large a Sims' glass plug (Fig. 24) as can be introduced should be placed well up in the vagina, a T-bandage and compress applied, and this worn for several hours. The next day repeat the treatment, using, if possible, a still larger plug until the full-sized one is worn. (See Fig. 24.) This one

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now may be introduced daily and worn several hours until all pain is relieved and intercourse is successfully accomplished. If the particular local disturbance is removed and intercourse once established, there usually will be no further difficulty.

In other cases the symptoms are so severe that little or nothing can be done without an anesthetic. Here let the patient be anesthetized, then remove the sensitive or painful spot, wash out and dilate widely the entire vagina, but especially its orifice, introduce the large glass plug, put on a firm compress and T-bandage, which should be kept in place with the patient in bed for four days, when it may be removed, the vagina douched with boric acid solution, the tube sterilized and reintroduced for several days more. It should now be removed and reintroduced and worn three or four hours daily. Then the large bivalve speculum or Sims' should be used daily until there is no longer pain or spasm, which will take about two or three weeks from the time of giving the anesthetic. There are still more severe cases demanding Emmet's operation of dividing on either side of the median line of the vaginal orifice the fibers of the sphincter surrounding it, and then carrying out fully the treatment already mentioned.

KRAUROSIS VULVA is a progressive atrophy of the labia minora, and constantly increasing narrowing of the vaginal orifice.

Etiology.—The cause of the disease is unknown, but is thought by some to be of neurotic origin, and by others it is supposed to come from the infection of trachoma.

Symptoms.—It may appear in young women, but usually occurs about the time of the menopause, and begins as small red spots, which appear below the level of the surrounding mucous membrane. These may

coalesce and gradually spread, or they may disappear from one place and appear in another. The parts become dry, shriveled and cicatricial, the vaginal orifice so contracted as to hardly admit the introduction of the finger, so that intercourse becomes painful, and even impossible.

Treatment.—The disease is not easily cured, but often something may be done to give relief. The pure carbolic acid carefully applied to the involved tissue sometimes gives relief, but the most efficient is a plastic operation by which all of the involved structure is cut away and the healthy adjoining tissues elevated and brought together over the raw surfaces and united with fine sutures.

d. **Neoplasms.**—Here as in most other parts of the body the growths are either benign or malignant. The benign may be included under the following: (1) Hypertrophy; (2) lipoma; (3) fibroma; (4) cystoma; (5) neuroma; (6) varicocele; (7) condyloma; (8) urethral caruncle; (9) hydrocele.

The first five need only be mentioned so that the practitioner may be aware of their possible occurrence, when he will make the diagnosis as he would for similar growths elsewhere in the body and treat them the same.

VARICOCELE is infrequent, and usually occurs only in connection with pregnancy or with some growth in the pelvis which interferes with the venous circulation, and requires simply a compress and firm bandage until pregnancy is over or the tumor is removed. But in cases where the varicocele persists in giving annoyance the veins may be resected.

CONDYLOMA may result from venereal disease or from uncleanliness, and they may be long and pointed or flat with wide base. They may be few or numerous forming large bunches making tumors the size of a fist. Where

they are few and scattered, if the parts are kept clean and a dusting powder of bismuth, calomel or lycopodium used once a day, they will rapidly disappear; or painting them freely with tincture of thuja occidentalis will cause them to speedily atrophy. Where they are very numerous or form large masses, they should be removed with the knife or scissors. Any constitutional trouble should be wisely looked after, and the general health put in normal condition by appropriate treatment, and local cleanliness maintained.

URETHRAL CARUNCLE, or irritable urethral caruncle, as it is sometimes called, is a little red fleshy growth which occurs just at the posterior margin of the meatus urinarius.

Etiology.—Possibly uncleanliness with some abnormal condition of the urine may cause it.

Symptoms.—Frequent and painful micturition and at times painful intercourse may first call attention to it. Patients then become nervous, restless and irritable. Examination reveals a bright red tumor varying in size from a grain of wheat to a cherry, located as above indicated, painful to the touch, and sometimes disposed to bleed upon being handled. It is a fact not yet explained that many of these little growths appear without giving rise to any symptoms at all, and yet they have the red color and are so located as to make them likely to cause it, but they do not. I presume the fact is that in these caruncles the nerve filaments are either wholly absent or not so highly developed as in those giving rise to so much pain. The diagnosis specially must be made between this affection and prolapse of the urethra. In the former there is greater redness, more sensitiveness to touch, the attachment is just to the posterior part of the urethra and does not go all the way round the meatus as does prolapse.

Treatment.—The main and principal treatment is to make a V-shaped incision through the meatus, cutting out the base of the growth and then uniting the margin with fine silk or catgut. Keep the patient quiet in bed a few days, have the urine carefully drawn every six hours for two days, when union will be complete and

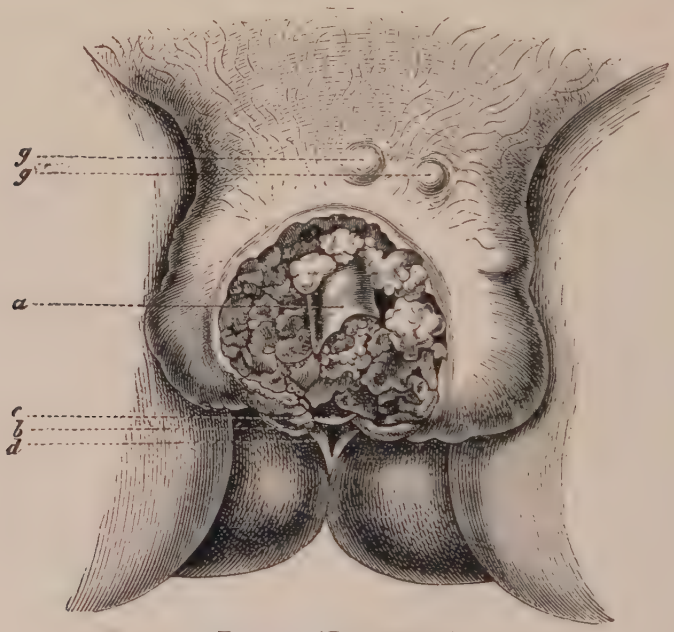

FIG. 25. (GARRIGUES.)

Epithelioma of Vulva (P. Zweifel): *a*, clitoris; *b*, fossa navicularis; *c*, vaginal entrance; *d*, torn perineum; *gg*, cancerous nodules in the skin.

the patient may pass urine voluntarily. In four to six days the one or two stitches may be removed.

HYDROCELE is not common, but it should be known to occur along the course of the cord and may appear either in the inguinal canal or in the upper part of the labia majora where one of the divisions of the ligament terminates. The fluid, which is usually serum, generally

forms in the canal of Nuck, and may communicate with the abdominal cavity, or it may be shut off and thus form a semi-elastic tumor as large as a hen's egg, in rare cases becoming much larger. A positive diagnosis can be made by introducing a hypodermic needle and drawing off the fluid.

Treatment.—If the fluid be all drawn off or pressed back into the abdominal cavity, a firm truss worn steadily for a month or six weeks may result in a cure. A more certain method is to open and dissect out the sac or pack with gauze and let it heal by granulation.

The **malignant growths** are sarcoma and carcinoma (Fig 25). Both of these growths are rare in the vulva, but the first may occur early or very late in life, while the second more likely takes place after forty years of age and before sixty. The diseases can be positively differentiated only by use of the microscope and will be discussed briefly together.

Etiology.—Any chronic inflammatory condition or persistent irritation of the vulva may open the way to the development of malignant disease, but the exact cause is unknown.

Symptoms.—A crack or fissure with tendency to bleed may arise at the junction of the two labia, or several small nodules may appear in some part of the vulva giving rise to excessive itching. These may ulcerate and pour out a thin watery secretion, and the necrosis and breaking down of tissue gradually extends with no tendency to heal. The inguinal glands soon become involved, the ulcers easily bleed, there is pain, sharp and lacerating. The surrounding tissues become hard and infiltrated. The differential diagnosis is shown in the following table:

TUBERCULOSIS.	LUPUS.	CANCER.
Nodules ulcerate on top.	Nodules ulcerate at base.	Nodules ulcerate on top.
Ulceration slow, does not heal.	Ulceration slow, but heals at some points.	Ulceration more rapid, does not heal.
No pain.	No pain.	There is pain.
No bleeding.	No bleeding.	There is bleeding.
No odor to discharge.	No odor to discharge.	There is odor to discharge.
Glands late involved.	Glands not involved.	Glands early involved.

Finally make a section of any doubtful but suspected nodule or ulcer and drop the piece into a bottle containing equal parts of alcohol and water, then send to a competent microscopist with a brief history of the case for an opinion.

Treatment.—Early and wide removal with the knife, and by a plastic operation so bringing the parts together as to get the entire surface covered and union by first intention is the only satisfactory treatment. Late cases may be palliated by a thorough curettement, the application of the actual cautery, and cleanliness. Washing daily or oftener with permanganate of potash, 8 grains to the pint of water, gives some relief from the foul discharge.

c. **The injuries to the vulva** may be either lacerations or contusions.

LACERATIONS may result from a fall against any cutting object as a broken jar or bed-chamber, and the labia majora cut through so that the bulbs are wounded, when a very severe and dangerous hemorrhage may result; or a tear may result from forcible intercourse when the male member is too large. The treatment must be adapted to the particular case. First control the hemorrhage by clamping and then with suitable ligature, tying the bleeding points. Unite the torn or lacerated surfaces with continuous or interrupted suture,

bringing the parts as nearly as possible into the normal relations.

CONTUSIONS may result from a fall or a kick, as by a brutal husband kicking his wife; but it most frequently follows the bruising of the vulva in childbirth, when the bulb of the vestibule on one side or the other is so pinched between the head of the child and the ramus of the pubic bone that it is ruptured and a concealed hemorrhage takes place in the vulva, forming a hematoma, or what is known as pudendal hematocele.

Symptoms.—A swelling within a few hours following some such injury gradually takes place, giving rise to a feeling of fullness, pressure and pain. A dark bluish color is given to the labium, and the enlargement varies in size from that of an orange to that of a child's head. It is not specially tender to the touch, but is firm or semi-solid.

Treatment.—When seen early, a compress and firm binder with an ice-bag constantly applied will help to limit the size by controlling the hemorrhage. If seen later, or if the enlargement is very painful or greater than an orange, make a free incision on the mucous membrane side of the labium, turn out the blood, clamp and tie the bleeding points, wash out the cavity with 1 per cent creolin or 3 per cent carbolic solution, then pack with gauze, put on a compress and bandage and keep the patient in bed. This dressing may be changed every second day, washing out the cavity and repacking as before until the cavity has closed up by a granulating process. If the hematoma should not be opened and dressed in this way an abscess may form and give rise to chills and fever about one or two weeks after the accident which caused it. The treatment then consists in opening freely as already directed, washing out and packing as before.

THE PERINEUM AND ANUS

Description.—The female perineum is bounded in front by a line drawn from one side of the pelvis to the other on a level with the posterior margin of the vulvar

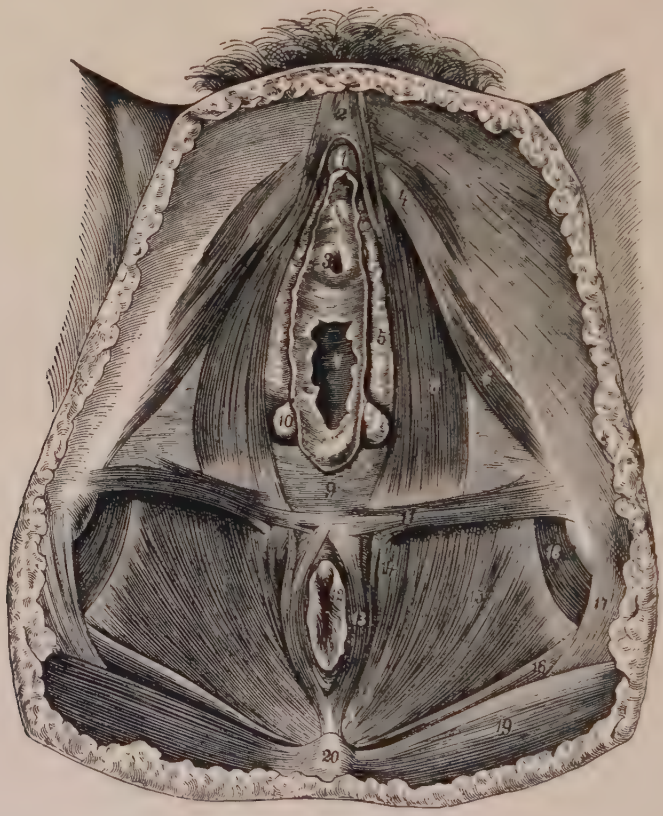

FIG. 26. (GARRIGUES.)

Muscles of the Perineum (Breisky): 1, glans clitoridis; 2, corpus clitoridis; 3, meatus urinarius; 4, tendon of ischio-cavernosus muscle; 5, bulb; 6, ischio-cavernosus muscle; 7, vaginal entrance; 8, sphincter vaginæ or bulbo-cavernosus muscle; 9, fossa navicularis; 10, Bartholin's gland; 11, superficial transversus perinæi muscle; 12, anus; 13, sphincter ani externus; 14, 15, levator ani muscle; 16, coccygeus muscle; 17, great sacro-sciatic ligament; 18, obturator internus muscle; 19, glutæus maximus; 20, os coccygis.

orifice; behind by a line parallel with this one on a level with the anterior margin of the anus. The lateral boundaries are the pelvic margins between these lines.

The muscular plan and arrangement of both the perineal and anal regions are well shown by Fig. 26. The skin, fat and connective tissue which normally covers these parts is from a quarter to a half inch thick, is well supplied with blood-vessels, nerves and lymphatics; these latter going to the inguinal glands. It will be noticed that the external or skin depth of the perineum, that is to say, the distance between the anus and the vulvar orifice, is one and a half to two inches. But if a finger be introduced into the rectum and another into the vagina it will be found that these two fingers approach each other the farther they enter these canals until after passing in one inch and a half they are only separated by less than half an inch of tissue which is made up of rectal and vaginal walls alone. These structures now between the two fingers, from the skin surface to the point where the fingers so nearly come in contact, has been called (erroneously) the "perineal body," and it is readily seen that they do form a pyramidal-shaped mass, but is made up of skin, fat, connective tissue, muscles, fibrous tissue, the raphe where muscles unite in the median line and of the blood-vessels, nerves, and lymphatics already mentioned.

Malformations.—The only malformation of special interest is that of imperforate anus. In this deformity the rectum may open into the vagina and the fecal matter escape through that canal, or there may be no outlet for it. In the former case we would have a congenital recto-vaginal fistula, curable by a plastic operation only. In the latter usually there is a simple occlusion of the lower end of the bowel or a thin membranous covering over the anus. In either of these last two conditions it

is generally safe to puncture with a scalpel at the location where the anus should be, and upon the escape of the meconium, slight dilatation with small dressing forceps, and sometimes the introduction of a small rubber tube for forty-eight hours will complete the cure. Where the occlusion is deeper a more elaborate operation will be required.

FIG. 27. (THOMAS & MUNDE.)
Suturing of Freshly-lacerated Perineum.

Diseases.— The diseases of the perineum and anus have been pretty well covered under the headings of those of the vulva with which they are apt to be associated. Pin worms, eczema, piles, fistula and fissure or ulcer are treated as in the male, and do not deserve special mention here.

Injuries of the perineum and anus. — These parts may be injured in numerous ways, but we are especially interested in those caused by childbirth or lacerations, which are of two degrees:

1 Partial laceration (Fig 27), that in which the

perineum is torn to any extent, great or small, but not involving the anal sphincter.

2. Complete laceration, that which involves the sphincter and either more or less of the rectal wall.

Treatment.—These lacerations are curable only by means of an operation, a perineorraphy. When the torn parts are repaired within twenty-four hours of the occurrence of the laceration it is called a primary perineorraphy. When done after twenty-four hours but before cicatrization is complete, or within a couple of weeks, it is called intermediary, and if done any time after cicatrization is complete, it is known as secondary perineorraphy.

The primary operation should always be done as far as possible, for two reasons: first, it closes up raw surfaces which are liable to receive infection; second, it avoids later operation and helps involution of the parts and makes a better getting up for the patient.

The operation for partial laceration can be easily, quickly and safely done by having things in readiness. There is not much pain associated with it, and no anesthetic is required. The patient should be turned across the bed with hips brought to the edge, and having cleansed the parts well and trimmed off any tags of skin or muscle which may be in the way of getting careful apposition, tuck a piece of sterile gauze or cotton up in the vagina to hold back the discharges for a few minutes, take a perineum needle (Fig. 29), and insert it into the skin of the labia majora just below the point of the beginning of the tear and carry it deeply underneath the vaginal mucous membrane clear around the tear and bring it out in the other labium; then thread the eye of your needle with silkworm-gut and pull it through as the needle is withdrawn. You now have the first and most important

suture in place buried all the way round and just beneath the vaginal mucous membrane so that when it is tied it will completely prevent all discharges from passing into this tear. This suture is well shown by the upper suture in Fig. 27. Before this suture is tied, others are introduced in like manner below it, and a quarter inch apart, until the required number are used. Now having all of the sutures in place, run a little sterile water over the wound and see that it is free from blood-clots; then quickly tie the first one firmly, but not tight enough to strangulate the parts, then tie each of the others in order. Remove the gauze or cotton placed in the vagina, cut the ends of sutures, leaving them an inch long, put on a clean pad and T-bandage, and lay your patient comfortably in bed. Let her sit upon the chamber to empty the bladder or evacuate the bowels, as this gives better drainage than to have her use the bed-pan and the urine should not be drawn if the patient can pass it. The bowels should be moved daily, the external parts may be cleansed carefully once or twice a day and a fresh pad applied afterward. The fourth or fifth day remove the stitches, although it will do no harm to leave them in all the week. The patient's legs do not need to be tied together as was the old practice.

For complete laceration the operation is rather more tedious and complicated, so that the patient should be allowed chloroform. Here it is most important to get the sphincter and bowel united properly, when the rest of the operation is completed as above given. If the bowel is torn more than half an inch in extent, it is better to put in several fine silk sutures, tying them so that the knot comes in the rectal canal, but carefully coapts the rectal mucous membrane, and then introduce the two sutures shown in the figure. Having gotten these in place and tied firmly (I use silkworm-gut),

then introduce the others precisely as shown for the partial laceration, and treat the case thereafter just the same, except in two respects: first, have the patient's bowels moved daily with a carefully given enema; second, leave the stitches in place at least a week.

The intermediary operation is seldom of any practical utility, and I shall not take time to describe it.

FIG. 30. (THOMAS & MUNDE.) Flap-splitting Operation for Complete Laceration of Perineum (lines of incision) (diagrammatic).

The secondary operations for both partial and complete lacerations can rarely be understood from descriptions and drawings, but must be seen to be appreciated and comprehended. Regarding them, however, it may be said that the same general principles prevail here that do in the primary cases. First, let the parts be made clean, having the bowels well emptied several days before operation, especially in complete lacerations. Second, cut away with knife or scissors all scar tissue, making even a larger raw surface than was the cicatricial tissue. Third, in complete laceration, expose the retracted ends of the sphincter by cutting away the scar tissue over them. Fourth, coapt the raw surfaces more carefully by tiers of buried catgut sutures and by continuous catgut sutures along mucous and cutaneous margins, than in primary work. Fifth, the silkworm-gut sutures, which

are here used in the same manner as shown in the figures already given, should be left in place from seven to ten days. Sixth, it is generally best in these cases to let the patient use the bed-pan and have the nurse cleanse the external parts each time afterward. Seventh, the vaginal douche should be used only where there is a discharge which might require it.

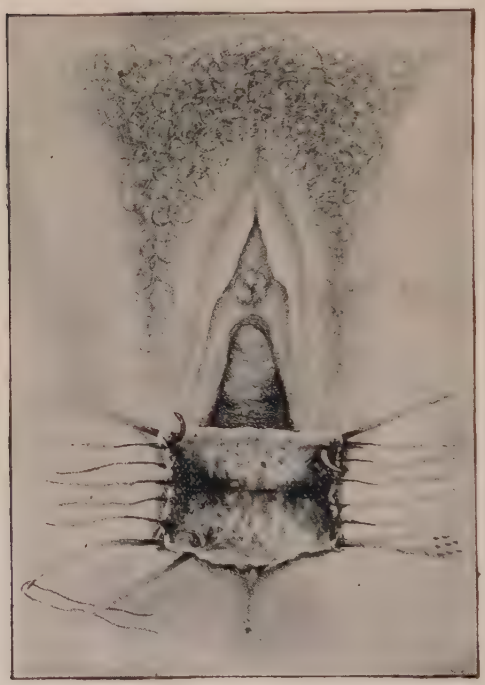

FIG. 31. (THOMAS & MUNDE.)

Flap-splitting Operation for Lacerated Perineum (Appearance of Wound and introduction of Sutures for both Varieties).

Tait's operation for complete laceration is a practical and not very difficult one to do after once being witnessed. Some idea may be gotten of it from the following pictures and description. Have the patient prepared as for other secondary perineorraphies. With a pair of sharp-pointed scissors split the septum transversely which separates the vaginal and rectal canals as shown by the transverse line in Fig. 30, then from each end of this line make an incision one inch long upward into the labia majora and another shorter one downward into the cicatrix of the ends of the sphincter. All of

these incisions should be fully three-eighths of an inch deep. Now with a tenaculum in each of the four corners of the transverse incision, pull them apart as shown in Fig. 31. Take the perineum needle shown in Fig. 29, and pass it one-twelfth of an inch from the margin

FIG. 29.

of the raw surface underneath the entire flap to the opposite side, thread it with silkworm-gut and withdraw it. This first and second suture should pass through the ends of the sphincter. The other sutures are now passed in like manner at one-fourth of an inch from the preceding ones, except they need not be buried all the way, but may be exposed in the middle of the wound, though this is not essential. When all are introduced, cleanse the wound and tie them firmly. It is now well to begin at the highest point of the wound in the vagina and make a continuous suture of fine catgut. Unite the edges of the mucous membrane over this wound so that no discharges from above can get between its surfaces to interfere with union by first intention. Keep the patient in bed, leave the sutures in place for ten days, when they may be removed, and the patient allowed after three or four days more to be up and around. The use of douches and the regulation of the bowels are managed as above.

CHAPTER V

THE VAGINA (vā-jī′-na)

Definition—The vagina is a musculo-membranous, dilatable, collapsed canal which connects the vulva and the uterus.

Anatomy.—The orifice of the vagina is surrounded by the caruncula myrtiformes, the remains of the hymen, or is mostly covered by this membrane. In the virgin the canal is about two inches long on its anterior wall and half an inch longer on its posterior. It is composed of mucous membrane and muscular fibers of both the circular and longitudinal variety, and a third outer coat consisting of connective tissue which joins it pretty firmly to the rectum behind and the urethra and bladder in front. The mucous membrane, which forms the first or inner coat, is thrown into transverse folds or rugæ on the anterior and posterior walls, called the columns of the vagina. This particular arrangement allows the anterior and posterior walls to lie against each other in the natural state, and also provides for the great distension necessary at childbirth. The vagina is well supplied with blood-vessels, nerves and lymphatics. It is well to remember that the lymphatics of the lower third of the vagina go with those of the vulva to the inguinal glands, while those of the upper two-thirds go with those of the cervix uteri to the iliac glands. (See Figs. 34 and 37.)

Malformations.—The possible malformations of the vagina may all be included under the following six heads:

1. ABSENCE OF THE VAGINA, EITHER PARTIAL OR COMPLETE.—When there is a partial absence, the uterus and ovaries are apt to be present and the deeper part of

the vagina normal in structure, but rudimentary in size, and the outer portion of the canal entirely obliterated. When there is complete absence of the vagina, the deeper internal parts are likely also to be absent. Hence it is not usually necessary to suggest any treatment for the complete variety, while for the partial it may be wise and important to make a canal.

Etiology.—No cause is known.

Symptoms.—The hymen is absent, and the anterior part is found closed entirely by a more or less firm cord, as detected by small finger in rectum and sound in bladder.

Prognosis.—Good in partial, only fair in complete.

Treatment.—With the patient under an anesthetic and the parts thoroughly cleansed, a finger in the rectum to guide the knife, an incision is made carefully through in the direction of the rudimentary vagina until it is opened, and the whole then dilated, cleansed, and a Sims' glass plug put in and held by compress and T-bandage until cicatrization is complete. The plug should be removed every three or four days and the canal cleansed, the plug sterilized and reintroduced. After the wound has thoroughly healed, the plug may be introduced and worn only at night for a time, then one night a week, and later one night a month, until all tendency to cicatricial contraction has passed away. In some cases plastic and more elaborate operations may be required.

2. DOUBLE VAGINA.—In this deformity there is a complete septum running the whole length of the vagina, separating it into two complete lateral halves.

Etiology.—It is not known.

Symptoms.—Examination reveals the two vaginæ more or less complete, with the septum, and generally two cervices uteri, if not two complete uteri. This septum may interfere with sexual intercourse.

Prognosis.—This is good, for the trouble is easily removed.

Treatment.—Under anesthesia dilate the two vaginæ and cut the septum from before backwards, remove the redundant tissue, sew up as much as necessary of the raw surfaces, pack the vagina gently with sterile gauze, and put the patient to bed until healing is complete. Remove the dressing in forty-eight hours, use carbolic or creolin 1 or 2 per cent douche thereafter every day once or twice.

3. ACCESSORY CANALS.—One or more blind canals sometimes open at the sides of the orifice of the vagina and extend backward one or two inches. No cause is known for their occurrence; they have no pathology, and do not give rise to symptoms unless they should become diseased or interfere with intercourse. The prognosis is good, for they are easily treated successfully by slitting them up and cutting away superfluous tissue if necessary.

4. ATRESIA OR OCCLUSION.—This deformity occurs but seldom, and is a complete transverse septum across the vagina, usually limited in extent. If, as Briesky and others seem to think, this difficulty is caused by secondary adhesions, then it does not properly belong under this heading; but since the subject is still under discussion—and most authors place it here—I will thus leave it for the present. No cause is known for its occurrence, and it is not likely to be discovered until the menstrual life of the girl should begin, when an examination to ascertain the physical condition of the genitals reveals a normal vulva and hymen as well as a normal commencement of the vagina, but very short, and probably a bulging forward of a septum that may appear almost thin like a deep hymen, and giving fluctuation because of the retained menstrual fluid.

The prognosis is good, for under anesthesia a careful

section through the septum, letting out the menstrual blood, thoroughly washing out the entire vagina and dilating it well with a retained glass plug or gauze dressing for a time until healing is accomplished, will give satisfaction.

5. RECTO-VAGINAL FISTULA is a congenital deformity of rare occurrence, and is recognized by either the presence or absence of the anal opening and noting the fecal discharge through the vagina.

It is rectified by establishing the anus and closing the fistulous opening with fine silk.

6. URETERO VAGINAL FISTULA is more rare as a malformation but does sometimes occur. It is recognized by the fact that the patient cannot control the urine, and upon careful examination it may be seen coming in jets from the vagina.

The only treatment is to insert the ureter into the bladder by operation.

DISEASES

1. **Vaginitis** (vaj-i-nī′-tis).—Inflammations of the vagina may be either acute or chronic, depending upon the violence of the symptoms and their duration. If the inflammatory action lasts a month only, or less, it may be called acute, and when it is prolonged over that time, chronic.

As to the varieties of vaginitis, they all may be classed under the following twelve heads:

1. Simple, or granular, follicular, adhesive or senile.
2. Specific or gonorrheal.
3. Septic or puerperal.
4. Phlegmonous.
5. Chancroidal.
6. Syphilitic.
7. Diphtheritic.

8. Dysenteric.
9. Emphysematous.
10. Mycotic.
11. Exfoliative.
12. Tubercular.

Etiology.—The simple may be caused by any chemical or mechanical irritation, as iron or acid preparations carelessly applied, pessaries, also by foul discharges from uterus or a fistulous tract from surrounding parts, by retained menstrual discharges, or the cast-off epithelial cells retained because of too tight hymen or vaginal orifice, or finally by any other simple irritant.

The specific is caused by the specific germ known as the gonococcus (gon-ō-kok′-us).

The septic or puerperal is caused by whatever particular germ produces the general sepsis following abortion or labor.

The phlegmonous is also produced by a virulent germ.

The chancroidal is caused by the germ of chancroids.

The syphilitic is caused by the chancre infection.

The diphtheritic is caused by the Klebs-Lœffler bacillus.

The dysenteric is caused by the dysenteric germ.

The emphysematous is caused by the gas bacillus most common in pregnant women.

The mycotic is caused by leptothrix vaginalis or oidium albicans, introduced by intercourse with men having diabetes, or by fingers which have been handling flour introduced into the vagina.

The exfoliative is caused by unknown conditions, but is most common in neurotic women.

The tubercular is caused by the bacillus of that disease.

Pathology.—In the simple and specific varieties there

is hyperemia, swelling, and exudation in the mucous membrane with swelling of the papillæ and enlargement of the blood-vessels.

In the septic, diphtheritic and dysenteric varieties there is in addition the formation of a more or less complete membrane upon or within the mucous membrane. In the phlegmonous there is a deeper and more violent inflammation, the pus burrowing along the connective tissue and dissecting up the more superficial layers.

In the chancroidal there is the multiple ulceration and destruction of tissue.

In the syphilitic there is the characteristic chancre.

In the emphysematous there are the vesicles filled with gas.

In the mycotic there is the inflammatory condition and white spots of fungi intimately connected with the epithelial cells.

In the exfoliative there is the simple throwing off more or less frequently of large patches of epithelial scales.

In the tubercular there are the nodules breaking down and containing the bacillus tuberculosis.

Symptoms.—The simple and specific, when severe, produce soreness, burning, pain and fever. At first the parts are dry and hot. The vagina is red and tender; later, there is increased secretion which soon becomes mucopurulent, thick, and may be creamy in appearance. In the specific form the urethra is apt to be involved, and there may be frequent and painful urination. The vulvo-vaginal glands are apt to be infected, too. But the microscope must be the final résort to distinguish positively between simple and specific vaginitis. It should not be forgotten, too, that even when the gonococcus is found there may not have been an impure intercourse.

In the septic variety there is the general infection with its particular symptoms, and the raw surfaces about the vulva and vagina, together with more or less of the mucous membrane, are covered with a grayish white membrane. There is pain, soreness and discharge.

In the diphtheritic there is a true membranous exudate with the presence of the diphtheritic bacillus and the systemic infection, and symptoms usually present with that disease.

In the dysenteric form there is chronic dysentery present, and the vagina presents grayish patches of membrane, ulceration and enlarged blood-vessels.

In the phlegmonous variety there is a rapid process, high fever, pain, soreness, burning, swelling, burrowing of pus along the connective tissue, and a gradual but rapid dissecting up of the two layers of the vagina from its bed.

In the chancroidal there are the multiple sores upon the vaginal surface, ulcerating and sloughing, with foul secretion, and possible enlargement of inguinal glands.

In the syphilitic there is the single sore such as characterizes the chancre wherever it involves mucous membrane, and the secondary enlargement of the glands with which these particular lymph channels communicate. Neither of these last two forms are common, but they may occur.

The emphysematous variety is characterized by being found almost solely in pregnant women, the gas vesicles generally appearing in the upper part of the vagina and upon the cervix. They produce some itching, slight soreness to the touch, and a crackling sensation to the finger as it passes over them.

The mycotic has the same symptoms as other mild inflammations of the vagina, and presents the appearance of small white patches upon the mucous membrane

something like thrush in the child's mouth. A microscopical examination reveals the particular fungus which produces it.

The exfoliative has slight soreness, burning or itching, and is marked by the frequent peeling off of patches from the mucous membrane without leaving raw or bleeding surfaces or producing much secretion. It occurs in neurotic or hysterical women.

The tubercular variety is usually secondary to tuberculosis elsewhere in the body, and is not often found here, but may occur as small multiple nodules, gradually breaking down as they do in other parts.

Prognosis.—All forms of vaginitis tend toward recovery under suitable treatment, so that we may say generally the prognosis is good.

Treatment.—The simple acute variety may readily be cured by putting the patient to bed for a few days, opening the bowels freely with salts, citrate of magnesia or seidlitz powder, and requiring the patient to properly use large douches, one or two gallons of hot water every three or four hours, followed immediately by an astringent or soothing wash, as sulphate of zinc, 2 grains in a pint of water, or acetate of lead, 5 grains in the same amount of water, or boric acid, 20 grains, or borolyptol, 2 drams, or fluid hydrastis, 2 drams in a pint of water. It is important, however, that a douche, to accomplish the desired results, be properly administered. Let the woman lie across the bed with hips elevated and brought well to the edge upon a Kelly pad or rubber sheet which drops into a slop-jar or other receptacle on the floor. The shoulders of the patient should be lower than the hips, that the force of the water may easily distend the vagina, unroll its folds and wash away the secretion, and at the same time bathe freely a large surface at one time and thus act as a poultice to the entire

pelvis. In addition to this arrangement the water should flow at a considerable height from a fountain syringe, or be forcibly injected from a bulb syringe by an attendant.

The specific variety should be treated promptly and energetically from the beginning lest the disease spread to the uterus, tubes and pelvic cavity. Here the patient should be put in the knee-chest position, the perineum raised with a Sims' speculum, and the secretion having been removed with a cotton swab, the cervix and entire vagina should be wiped out thoroughly with a solution of nitrate of silver, 40 grains to the ounce. Make sure of it by going over two or three times, and finally withdraw the speculum, following it out as you withdraw it by wiping that portion of the vagina against which it has pressed with a fresh supply of the solution upon your swab of cotton. Put the patient to bed, open the bowels as in the other case, and have the patient use the plain water douche as above, but follow each time with a douche of permanganate of potash, 8 grains to the pint. The next day put the patient again in the knee-chest position and put a dram of boric acid powder about the cervix and in the vault of the vagina. Continue the douches and potash as before. The next day again use the silver nitrate, touching especially those points which show infection by their redness or increased secretion. Alternate this with the silver and boric acid until all signs of inflammation have disappeared. Because of the vast importance of arresting at once a specific vaginitis, I would urge that this be the first treatment given in all suspected cases, if seen within seventy-two hours of development, for it will cure a simple case as well as a specific one, and will do no harm in the former, although it is much more heroic treatment than such cases demand when their non-specific character is established. If seen for the first time after the time above specified, it would

not be necessary to use this heroic treatment, but the milder one, unless it be reasonably certain that the case is specific. Internal remedies for action upon the urine are not so important in women as in men. However, if the urethra be involved so that there is frequent and painful urination, the administration of citrate of potash, 10 grains, tincture of belladonna, 5 drops, in large quantities of water three or four times a day will afford prompt relief.

The septic or puerperal needs very little local attention aside from the frequent hot 2 per cent carbolic douches, or 1 per cent creolin douches, after the preliminary treatment, which is to get absolutely rid of all infective discharges coming down from the uterus, then remove all of these membranous patches from the vagina and vulva with a sharp curette and cauterize freely with 95 per cent carbolic acid. The simple local treatment thereafter is secondary to the constitutional, which will be considered under another heading.

The phlegmonous demands energetic treatment from the first. Hot carbolic or creolin or lysol douches are important, together with freely opening the bowels and keeping the patient quiet in bed, but most important is it to remember how quickly pus forms in the connective tissue, and as soon as it forms open freely and thoroughly, lest it burrow widely and do great damage. Cleanse with bichloride solution 1:2000 and keep the incisions wide open with rubber tubing or gauze. Irrigate daily until the active process ceases, and then less often as may be necessary.

The chancroidal should be treated by curetting thoroughly each sore, then burning it freely with the Paquelin cautery or nitric acid. Put a light gauze dressing in the vagina and use creolin 1 per cent douches twice a day. Every second day let the physician himself dress the

sores by dusting them with calomel, bismuth, iodoform or aristol.

The diphtheritic may be cured largely by curing the patient of her diphtheritic condition, and the local vaginal manifestation will demand only cleanliness with douches at intervals of four to six hours, and soothing applications, as lead and opium wash.

The dysenteric will demand the cure of the chronic dysentery and some of the above mild washes and astringents.

The emphysematous will get well as soon as the pregnancy is over, and will require only mild astringent douches, or at most opening the vesicles and touching the base with tincture of iodine or sulphate of copper.

The mycotic will heal rapidly under injections of borax, 20 grains, or salicylic acid, 30 grains, or sulphate of copper, 10 grains to the pint of hot water three or four times a day.

The exfoliative gets well more quickly under soothing applications like small tampons of absorbent cotton saturated with boroglyceride solution once a day, or once in two days, while the bowels are regulated, the system toned up, and the bromides are given to overcome the nervous disturbance.

The tubercular requires, generally, the constitutional treatment due to that condition. Locally the nodules should be removed with the knife or the curette, and then cauterized with the thermocautery or pure carbolic acid.

NEOPLASMS

1. Benign.
   (*a*) Cysts.
   (*b*) Fibroids.
   (*c*) Polypi.

(*d*) Papillary or warty excrescences.

2. Malignant.

(*a*) Sarcoma.

(*b*) Carcinoma.

Cysts may be found upon any part of the vaginal surface, but are most frequent upon the anterior wall. They vary in size from that of a hazelnut to that of an egg. They may arise from a closed lymphatic channel, from Gärtner's or Müller's ducts, or may be of embryonic origin. They usually do not give rise to symptoms until large enough to produce irritation from friction or to interfere with intercourse. They are recognized by their globular form, tense, elastic feel, and if need be, by drawing off part of the fluid with a hypodermic needle. They should be removed by excision.

Fibroids are not very common, but sometimes occur and vary greatly in size. They may be sessile or pedunculated and form polypi. The symptoms produced are those due to pressure or irritation, or interference with nature's processes. They are firm under pressure, not tender, and are manifestly connected with and are a part of the vaginal wall. The treatment consists in cutting them out as you would a similar growth from the skin.

Polypi may be of a fibrous or mucous variety, and are apt to be quite vascular, so that they are best removed by torsion or by transfixing the pedicle with a firm catgut ligature and tying it off in both directions, after which the tumor is cut away.

Papillary or watery growths occur here from venereal diseases and from uncleanliness. They may be snipped away with a pair of scissors and the base touched with Monsel's solution, or adrenalin chloride.

Sarcoma is uncommon, but may occur in young girls or old women. When it appears primarily in the

vagina it presents one of two forms, either the distinct nodular or the diffuse superficial variety. The nodules ulcerate, bleed easily, and throw off a foul secretion. Later comes pain and glandular involvement. The diffuse spreads along the mucous membrane, there is ulceration, bleeding and discharge with like glandular infection and pain. The diagnosis cannot be made from carcinoma without a section being made of the nodule or the ulcerated surface and submitted to a competent microscopist. Before ulceration it cannot be told in the nodular or circumscribed form from fibroids; but if there are multiple nodes or lumps it may be suspected; and in all suspicious cases, either under cocaine or an anesthetic, cut out a section as large as a pea or hazelnut and drop it into a bottle containing equal parts of alcohol and water. Then send it at once with a brief history of the case to a competent microscopist for examination.

Prognosis.—This is good just in proportion to the time when the disease is first recognized and the thoroughness of its removal in the early stages.

Treatment.—Whether circumscribed or diffuse, complete and wide removal of all the tissues involved is the most reliable early treatment. Later, when this cannot be accomplished, some little comfort and relief may be given by thorough curettage and the use of the actual cautery and the frequent use of permanganate of potash douches. The injection hypodermically of the Coley fluid offers some hope, but results are not flattering.

Carcinoma is rarely a primary disease of the vagina, but nevertheless does occur in women after thirty years of age as a rule. It also may be circumscribed or diffuse, and rarely produces symptoms until ulceration, bleeding or foul discharge occur. Later there is, of course, thickening of the walls, hardness and stenosis of vagina, pain and involvement of rectum and bladder. Let it be now

impressed that when there occur nodules or a bleeding surface in the vagina not easily otherwise accounted for, it should be considered suspicious and a section made at once for the microscope. Delay is dangerous.

Prognosis.—The prognosis is bad, because the cases are usually overlooked until glands are involved and the disease widespread. If the advice above given is generally heeded by the public, so that early radical treatment may be given, it will be very much better.

Treatment.—Early and wide removal is not only justifiable but essential; and anything short of this, if the case is seen in time, is criminal negligence. Later, only such palliative treatment as above suggested is all that can be done. The once vaunted carbide of calcium treatment is not effective, except to destroy the foul odor and make life more tolerable. The new remedy, arsycodile, so much praised in France, used hypodermically, is too new to depend upon, but it may be tried.

INJURIES TO THE VAGINA.

The injuries which occur to this canal may all be classified under the following:

1. Contusions, resulting in
   - (1) Ecchymosis and abscess.
   - (2) Vesico-vaginal fistula.
   - (3) Recto-vaginal fistula.
2. Lacerations of three kinds:
   - (*a*) Superficial, resulting in
     1. Infection.
     2. Stenosis.
   - (*b*) Deep, resulting in
     1. Hemorrhage.
     2. Infection.
     3. Stenosis.
     4. Cystocele.
     5. Rectocele.
     6. Prolapse of vaginal walls.

(*c*) Submucous, resulting in

1. Vaginal hernia.
2. Relaxed vaginal orifice.

Contusions of the vagina producing ecchymosis or abscess are treated upon the same general principles of those elsewhere in the body.

The vesico-vaginal and recto-vaginal fistulæ may be caused by the pressure of the head of the child in labor or by the use of the forceps, more commonly the former. When in labor the head of the child becomes arrested and firmly lodged in the pelvis, no time should be lost in securing rapid delivery, for it is generally this prolonged pressure that produces so much contusion at some one point that the tissues are speedily devitalized, and a few days after labor a small slough is thrown off from the anterior or posterior wall and the urine trickles through an opening in the one or feces pass through the other. The fact that these fistulæ are less frequent than formerly is no doubt due to the greater skill of the general practitioner of the present. The diagnosis is made by noting the escape of the urine or the feces through the anterior or posterior wall. It may be necessary in some cases to inject the bladder with a colored sterile fluid, like permanganate of potash solution or milk, and to watch carefully for the point of its exit on the anterior wall.

Treatment.—The treatment consists in having the bowels thoroughly emptied, the vagina well cleansed, and then with sharp scissors curved on the flat or with a knife pare the edge of the fistula in an oval shape and with beveled margins down to, but not through, the mucous membrane of the bladder (or rectum), and having thus made a large raw surface, much larger than the original opening, introduce the sutures of fine silver wire, silk-worm gut or fine silk, down to, but not through,

the mucous membrane of the bladder, one-eighth of an inch apart; and having cleansed the wound of all clots, tie or twist the sutures firmly. Put the patient to bed, and in the vesical fistula have the urine carefully drawn every four hours for two days, when, if the patient can do so, she may be allowed to pass the water herself. In the rectal variety the bowels may be moved by enema every day. The stitches should be removed in a week or ten days.

Lacerations are of three varieties, and may be the result of labor with or without artificial aid.

(*a*) **Superficial lacerations** are those in which little more than the mucous membrane is torn, either in front, behind, or on the sides. Some hemorrhage or infection may follow along these tracks, which have opened up so freely the lymphatics. Later, cicatrization of the wounds may result in stenosis or narrowing of the vagina. If discovered at the time of delivery these wounds should be carefully cleansed and sewed up with a running suture of catgut, which will prevent all evil consequences. Stenosis will be treated of under the next heading where it is most likely to occur.

(*b*) **Deep lacerations** may take place in connection with those of the perineum or independent of them, and may be at the vaginal orifice or higher up in the vagina. The primary results may be more violent hemorrhage and more serious infection than in the superficial variety. The secondary or remote results will be stenosis, cystocele, rectocele, or prolapse of vaginal walls. Hence it is important for these deep lacerations to be repaired if possible at the time of their occurrence. The parts being well cleansed and ragged portions removed, a deep and buried continuous catgut suture may first be used, bringing the muscular tissues together and well up into the normal position, then a superficial tier of sutures

closing the mucous membrane carefully over these will prevent primary trouble and save future complications.

Cystocele (sis-tō-sēl) is the dropping through the vaginal orifice of the anterior vaginal wall carrying with it a portion of the bladder.

Etiology.—This condition is usually caused by childbirth so injuring the vaginal orifice that it does not give the normal support to the anterior wall, and when the patient gets about, it gradually descends and drags the firmly attached bladder with it. In exceptional cases it occurs in girls or women who have never borne children, but who from a fall or strain have had the uterus prolapsed and this has gradually produced the cystocele.

Symptoms.—Dragging sensation in the vagina. Frequent urination and difficulty in emptying the bladder. When the patient lies upon her back and the lips of the vulva are separated or specially when she stands, the bladder with the anterior wall protrudes at the orifice. The introduction of a sound or silver catheter into the bladder will quickly differentiate this from a cyst or other tumor.

Treatment.—In the milder forms of this trouble, and especially in the early stages, if there be a good perineum and vaginal orifice, the Gehrung pessary, properly fitted, will give prompt relief and may in time effect a cure. Otherwise the patient should be given a good perineum and vaginal orifice by whatever means are necessary, but first an anterior colporrhaphy is done. Sims' operation is eminently successful, and will meet all of the indications. The diagram, Fig. 00, will show the oval-shaped surface as it is denuded of mucous membrane along the anterior vaginal wall. This raw surface must be large enough to remove the redundant tissue, and yet not so large but the lateral edges of the wound may readily be brought accurately together for union by first intention.

The mucous membrane may be most easily removed by cutting it away in long strips with blunt scissors curved on the flat. I now prefer to use interrupted chromicized catgut sutures running across the wound and bringing the edges together so as to make a cicatrice extending almost from the cervix to the vaginal orifice. The patient should be kept in bed ten days, the bowels moved daily, the patient evacuating the bladder voluntarily, and a vaginal douche of 1 per cent creolin given each day after the first forty-eight hours.

Fig. 33. (Thomas & Munde.) The Perineal Body destroyed, the Rectal Wall descends.

Rectocele (Fig. 33) means the protrusion of the posterior vaginal wall with the attached portion of the rectal wall at the vaginal orifice.

Etiology.—It is generally caused by childbirth or other force removing the normal perineal and vaginal support so that straining, lifting or walking gradually forces these walls out at the orifice.

Symptoms.—Dragging sensations, difficulty in defecation, and the consciousness to the patient that something protrudes which should not, brings the patient for examination, and the physician finds with his finger in the rectum that it easily descends into this protruding mass, and thus he differentiates it from prolapse or any form of tumor or hernia.

Treatment.—Usually the operation already given, perineorrhaphy, is required, and a posterior colporrhaphy as well, so that both operations are done at once, or the operation devised by Emmet is specially useful. If, however, a case should exist requiring a posterior colporrhaphy where the perineum and vaginal orifice were normal, then an operation on the posterior wall like that already given for the anterior would be justifiable and effective.

Prolapse of vaginal walls may be independent of rectocele, but is generally associated with either a lacerated perineum or a relaxed vaginal orifice, and is accompanied by prolapse of the uterus or greatly elongated cervix.

When the perineum is properly repaired, the vaginal orifice restored, and the prolonged uterus or elongated cervix properly cared for, if any vaginal prolapse remains it should be treated by anterior or posterior colporrhaphy, removing the redundant tissue as already suggested. Or rather this should be done while the others are being done. The wearing of the Cutter or McIntosh pessaries during the daytime will give great temporary relief in some cases, but these are not curative.

Submucous lacerations are those in which from strain or childbirth the muscular wall is torn and the intestines or omentum or other contents of the pelvis are allowed to protrude beneath the vaginal mucous membrane, and thus a hernia is formed. The diagnosis is made first by remembering the possibility of its occurrence; and second, by noting the impulse to the mass which protrudes, on coughing, and also the ring in the muscular wall. The treatment may be palliative and not very satisfactory with large bulky pessaries, which practically fill and distend the vagina. The Smith rubber pessary inflated with air is one of the best for this pur-

pose. However, the most successful treatment is to sew up the rent in the muscular wall after reducing the hernia and cutting away all redundant tissue. The tear in the sphincter muscles giving a relaxed vaginal orifice demands Emmet's operation, or a similar one, to restore these parts and give normal support at the vaginal orifice.

CHAPTER VI

THE UTERUS

Anatomy.—The uterus is a hollow, pear-shaped, muscular organ projecting through the vault of the vagina, having in front of it the bladder and behind it the rectum. Its function is to receive the product of conception and retain it until the embryo is fully developed and then expel it. In the virgin it is two and one-half inches long, one and one-half inches broad at the upper and widest part, and one inch thick. In the normal multipara these dimensions are increased by one-half inch, except the thickness which remains about the same. It is suspended in the pelvic cavity (nearly in its center) by eight ligaments. As the woman lies upon her back the cervix points toward the posterior edge of the orifice of the vagina while the body curves gently forward. In the erect position the body is thrown more forward and the cervix backward, while the entire

FIG. 34. (THOMAS & MUNDE.)
Normal Topography of Female Pelvic Organs (diagrammatic).

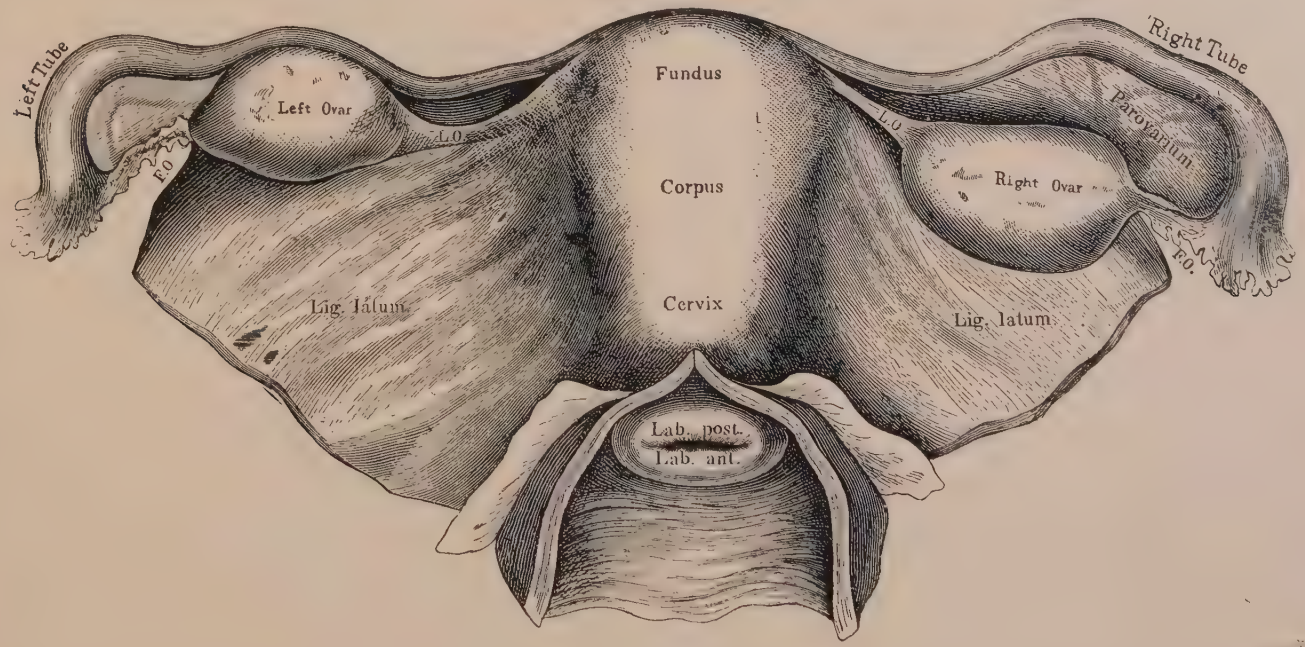

FIG. 35. (THOMAS & MUNDE.)

Vagina. Rear View of Uterus and Ovaries: L O, ovarian ligament; F O, ovarian fimbria. Natural size. (From Beigel.)

organ descends slightly toward the orifice of the vagina. Although a hollow organ and containing the uterine cavity, its walls lie in contact antero-posteriorly. It is divided into a cervix, a body and a fundus. The cervix is about one inch long, the body one inch, and the fundus one-half inch. The external opening of the cervix is called the external os, which leads directly into the cervical canal, at whose upper end is a narrow opening, the internal os, which separates the uterine cavity and the cervical canal. The part of the cervix in front of the external os is called the anterior lip and the back of it the posterior lip. At the two upper angles of the uterine cavity are two fine openings (one in each horn of the uterus) directly communicating with the Fallopian tubes. That part of the uterus above these two openings is the fundus. The uterus is composed of three coats, the internal or mucous, the middle or muscular which makes up most of its structure and thickness, and the external or peritoneal. (Fig. 35). The vaginal mucous membrane is continued over that portion of the cervix which projects into this canal and the internal coat is continuous with this membrane. In the cervical canal, however, the follicles are large, numerous, and deep, many of them dipping down into the muscular tissue. In the uterine cavity this membrane is called the endometrium, differing somewhat from ordinary mucous membrane and called lymphoid tissue. The middle coat is made up of layers of longitudinal and circular muscular fibers, as well as many which are more or less irregularly interlaced. Around the internal os the circular fibers are dense, firm, and greatly increased over those of other parts. The external coat is made up of peritoneum which covers it closely above the point of uterine attachment to bladder and vagina. It is richly supplied with blood from the uterine arteries which anastomose freely with the ovarian arteries. An important branch

goes off about the internal os to anastomose with its fellow of the opposite side, thus forming the circular artery. The lymphatics are abundant, those of the cervix going with those of the upper part of the vagina to the iliac glands, while those from the body and fundus

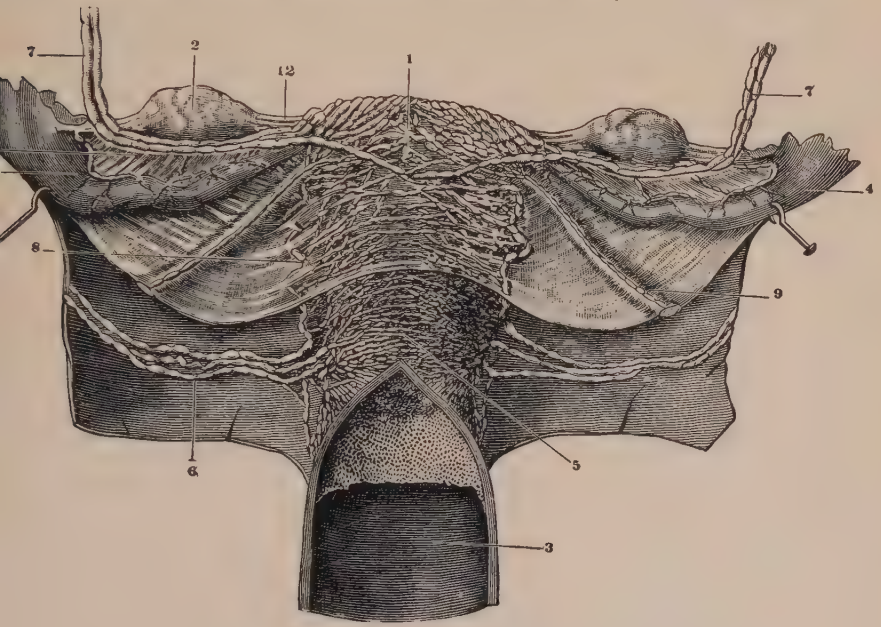

FIG. 36. (GARRIGUES.)

The Lymphatics of the Uterus (Poirier): 1, lymphatics from the body and fundus; 2, ovary; 3, vagina; 4, Fallopian tube; 5, lymphatics from the cervix; 6, trunks going from the cervix to the iliac glands; 7, trunks going from the body and fundus to the lumbar glands; 8, anastomosis between cervical and corporeal lymphatics; 9, small lymph-vessel in the round ligament, going to the inguinal glands; 10, 11, lymphatic vessels from the tube, which empty into the large vessels coming from the body of the uterus; 12, ovarian ligament.

go to the lumbar glands. The eight ligaments above referred to which suspend the uterus in its normal position are two broad or lateral ligaments, two anterior or vesico-uterine, two posterior or utero-sacral, and two round ligaments. The broad ligaments are double folds of peritoneum extending from the sides of the uterus

laterally to the pelvic wall. They contain some muscular fibers, connective tissue, lymphatics, blood-vessels, and nerves, and are very efficient supports. The two anterior ligaments are folds of peritoneum connecting the uterus and bladder, while the two posterior are folds of peritoneum connecting the uterus and sacrum, but allowing the rectum to pass down between them. The round ligaments are attached to the horns of the uterus in front of the Fallopian tubes and pass to the internal abdominal ring, down the inguinal canal, where they divide into three slips, one of which, in passing out of the external ring, is attached to the spine of the pubes, one in the labia majora, and one in the mons veneris. This ligament is made up of connective and muscular tissue. It has lymphatics which go to the inguinal glands and thus slightly connect the uterine lymphatics with these glands. It also contains a central artery upon which its nutrition depends. (Figs. 36 and 37.)

The malformations of the uterus may be classed under the following six varieties:

1. Absence of uterus, a rare but occasional occurrence in a woman who may otherwise be normal and well developed, but is most frequently associated with other physical defects.

2. Rudimentary uterus, which though uncommon is of more frequent occurrence than the former.

3. Uterus unicornis, in which case but one of Müller's ducts is developed and where but one horn or section of the uterus is present. This form of uterus is long, pointed, and curved toward the pelvic wall. Pregnancy and labor may take place in the usual way.

4. Uterus bicornis is that variety in which Müller's ducts remain separated in that part, at least, which usually forms the body, and which, therefore, presents two distinct horns.

FIG. 37.

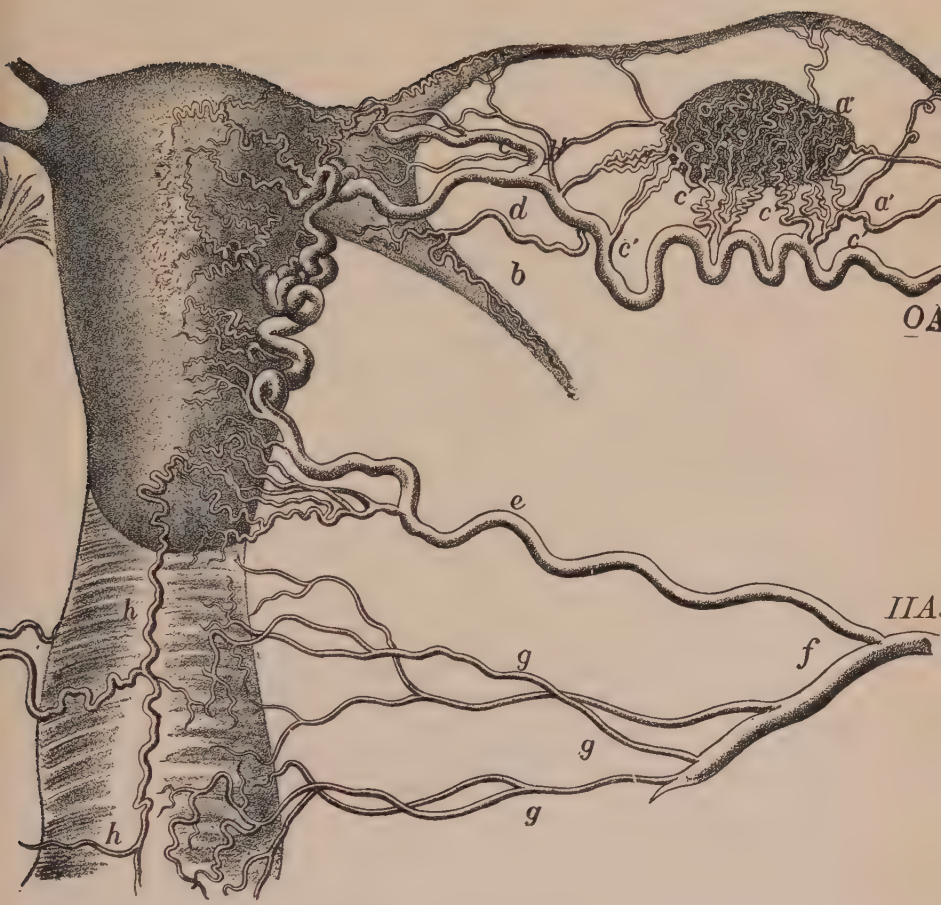

FIG. 37. (GARRIGUES.)

The Arteries of the Uterus, the Ovaries, and the Vagina (Hyrtl): *OA*, ovarian artery; *a'*, *b'*, and *c*, branches to tube; *b*, branch to round ligament; *c'*, branches to the ovary; *d*, anastomosis between ovarian and uterine artery; *e*, uterine artery; *IIA* and *f*, internal iliac artery; *g*, vaginal arteries; *h*, azygos artery of vagina. A branch of the uterine artery goes to the cervix, anastomosing with that of the other side (*circular artery*) and with the vaginal arteries. The organs are represented in normal size, but in order to show the arteries well they have been injected after the removal of the specimen from the body and after stretching the tube and the broad ligament. Thus the distance from the median line to the fimbriated end of the tube has become about twice the distance from the median line to the wall of the pelvis.

5. Uterus didelphys, or duplex separatus, is that variety in which the Müllerian ducts do not come in contact and each forms a separate and distinct uterus, having a tube and ovary only on one side of each.

6. Uterus septus and subseptus is that variety in which a complete partition separates one-half from the other in the former, while in the latter form the partition is only partial. There may be a double or single cervix, and the vagina may be double or single. (Fig. 38.)

DISEASES

1. **Metritis** or inflammation of the entire thickness of the uterine wall may be acute or chronic. The acute may present any one of the following varieties:

(*a*) Simple or catarrhal.

(*b*) Septic or puerperal.

(*c*) Specific or gonorrheal.

(*d*) Diphtheritic.

Etiology.—The simple is due to exposure to cold, operations upon the body or cervix, coitus during menstruation or too early after abortion or labor.

The septic is the most common and is caused by the infections which follow abortion or labor, especially criminal abortion, or the use of unclean instruments in or about the uterus.

The specific is caused by the gonococcus and follows specific vaginitis and endometritis.

Diphtheritic metritis is caused by the special bacillus of this disease as found in diphtheria wherever located.

Pathology.—The whole uterus is enlarged and thickened. Its cut surface shows increased redness; there is softening, also enlarged blood-vessels and infiltration of round cells between the muscle fiber and in the endometrium.

Symptoms.—There is fever, burning and bearing

down sensation in the pelvis, with cramping pains, sometimes difficulty in urinating, constipation or diarrhœa, with pain in the back. There may be a bloody or purulent uterine discharge, and if it be specific, the discharge will be filled with the gonococci. The abdomen may be

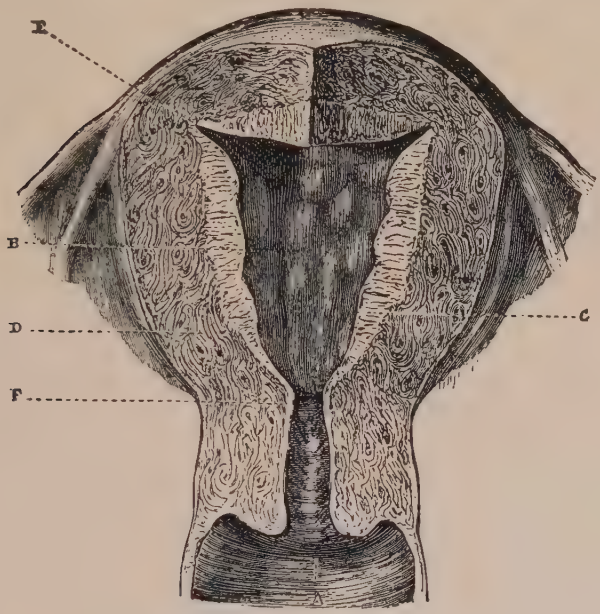

FIG. 38. (GARRIGUES.)

Uterus during Menstruation (Courty). Cut open to show the swelling of the whole organ, and particularly the mucous membrane: A, mucous membrane of cervix; B, C, mucous membrane of corpus, much thickened; D, muscular layer; E, uterine opening of tube; F, os internum (the mucous membrane tapers down to these openings).

tympanitic. Combined digital and abdominal examination reveals a hot, tender vagina, an enlarged, softened and tender uterus. In the diphtheritic there will be the membrane upon the vulva, vagina and cervix, the culture of which would give the bacillus. In all cases the history would help to make the diagnosis and classify the type to which it belongs.

Prognosis.—Generally speaking the prognosis is good, but of course will depend upon the severity of the attack, the variety, the patient's natural ability to throw off disease, together with the possibility of removing the cause.

Treatment.—The simple should be treated by an ice-bag over the lower abdomen, thorough evacuation of the bowels with one or two extract colocynth compound, ipecac and blue pills, followed in four hours by Rochelle salts or citrate of magnesia, and then daily kept open with small doses of magnesia or a seidlitz powder. The fever and pain may be reduced by giving sulphate of quinine, 4 grains, and phenacetine, 2 grains, every three hours. If pain is severe, it may be relieved best by giving a rectal suppository of 2 grains of opium once or twice a day. If the ice-bag is not agreeable, or fails in its usual happy effect when used early, then the hot-water-bag, with hot vaginal douches (one or two gallons) every three or four hours, will afford marked relief. The depletion effected by the boroglyceride tampon is sometimes very helpful used every day or every second day.

The septic demands thorough cleaning of vulva, vagina and endometrium with abundance of hot water, bichloride solution 1:2000, and the thorough use of the sharp curette over the raw surfaces and those covered with membrane, especially the whole inside of the uterus, because generally at first the case is one of acute septic endometritis. Then all of these surfaces should be freely touched with 95 per cent carbolic acid to destroy all remaining sepsis and to prevent further infection. The local treatment afterward should be the same as given above for the simple variety. Internally, however, while the colocynth pills and salts for the bowels as well as the opium for pain are all right when indicated, the treatment must be supporting and stimulating. Sul-

phate of quinine, 4 grains, in capsule, followed by tincture of chloride of iron in water every three hours, is very beneficial. The diet must be carefully looked after, for the patient must be well nourished. Beef tea, milk, eggs and toast well buttered should be given in abundance. Sometimes even milk punch and egg-nog are extremely useful. Special drugs to meet special indications may be called for.

Specific metritis demands rather heroic measures as well as the foregoing. The vulva, vagina and uterus must be thoroughly cleansed, and the latter should be curetted with the sharp curette and subjected to the carbolic acid treatment. The after-treatment is like that of the simple, except that the vaginal douches should be followed each time with a wash of permanganate of potash, eight grains, in a pint of hot water.

Diphtheritic metritis requires the same local treatment as the simple except the ice-bag, and the hot douches need not be so abundant or so frequent. The general treatment must be that of diphtheria, including the supporting and stimulating features as well as the injection of antitoxin.

In all of the foregoing varieties the patients should be kept quietly in bed. It is also well to remember that sometimes the uterus becomes so badly infected or so filled with pockets or foci of suppuration that a vaginal hysterectomy is required.

Chronic metritis is that variety in which the endometrium and middle coats are inflamed and thickened, the peritoneum generally not taking part in the process, as it is more apt to do in the acute form.

Ætiology.—It is caused by chronic endometritis or may result from acute metritis, too frequent coition, uterine displacements, or repeated attacks of pelvic peritonitis.

Symptoms.—Pain in back, leucorrhœa, bearing down sensations, menorrhagia, dysmenorrhea, constipation and frequent urination are common. Digital examination reveals a large uterus. Inspection shows the cervix thickened and a discharge occurring from the canal.

FIG. 39.

Three months' fetus, mummified in uterus for seven months. Woman had several children, well and strong. Thought she was pregnant, as menstruation ceased and she grew larger, presenting all the usual symptoms of pregnancy, but did not seem to make any progress after about fourth month. Menstruation did not recur, and after ten months I saw the case with Dr. F. W. Houghton, and recommended dilating the uterus and emptying it, which he did, and removed this specimen.

The sound may reveal tenderness at the internal os or in the body, and often upon its withdrawal there appears a trace of blood. The history of the case is always valuable when it can be relied upon. (Fig. 39.)

Prognosis.—Patients can be relieved by a proper

course of treatment, but perfect cures are by no means easy to obtain, nor are they common, yet they do occur.

Treatment.—Remember when treating an acute metritis that the chronic form may follow, therefore pursue carefully the treatment of the early case to its entire cure as a prevention of the chronic variety. Have the patient avoid all causes of pelvic congestion, as sexual intercourse, being on the feet during menstruation, and allowing the bowels to become constipated. Outdoor exercise in moderation between the periods is beneficial. Massage for the back and abdomen is helpful. Hot baths twice a week to keep the skin active are advisable. Tonics should be given freely, as elixir of quinine, iron, and strychnine, one dram, three times a day. Phosphate of sodium, one dram, in a glass of water the first thing every morning will help to regulate the bowels. Tait has recommended chlorate of potash, 7½ grains, three times a day, and a few drops of dilute hydrochloric acid. The use of the electric current by one pole of the Faradic battery over the abdomen or lumbar region while the other is against the uterus or in the uterine cavity will often aid in relieving this abnormal condition. Fluid extract of ergot, in dram doses three times a day for a week following each menstruation, is very effective. If there be menorrhagia, the ergot may be used after the flow has lasted three days, but should not be used longer than a week without intermission. The quiet rest in bed or on the sofa during each period is very important. The free application of Churchill's tincture of iodine to the entire cervix, followed by inserting a dry tampon for twelve hours about once or twice a week, will often be an efficient aid in the restoration to health of such cases. Other means having failed to give relief, sometimes a thorough curettement with the sharp instrument, especially if used just after menstruation,

will do what other means have failed to accomplish. This will be particularly true if there has been serious involvement of the endometrium. In still other cases, in addition to the curettement there should be a V-shaped piece cut out of the cervix upon each side almost as deep as to the internal os; then sutures should bring these cut surfaces together as will be shown in lacerations of the cervix. These simple operations act as very efficient stimuli to the uterus, and absorption of inflammatory deposits and reduction in size rapidly occur.

Chronic endometritis means a chronic inflammation of the lining membrane of the body of the uterus.

Etiology.—This disease is one of the most common of those peculiar to women and has many causes, among which we must name the following: Acute endometritis or metritis of every kind. It may follow lacerations of the cervix and inflammation of the cervical canal. It may result from dysmenorrhea, retroflextion, or subinvolution of the uterus. Here large granulations often occur. Every prolonged unnatural congestion of the pelvis predisposes to it. Undue exposure, vaginal douche, or sexual intercourse during menstruation. Old age gives rise to a peculiar variety called senile endometritis in which the columnar epithelium is changed into a horny layer.

Symptoms.—Pain, heaviness, bearing down, or dragging sensation, leucorrhœal discharge, thick and white or yellowish as it escapes from the external os. Sometimes dysmenorrhea, menorrhagia and irritable bladder exist. Amenorrhea may be present in some cases. The introduction of the sound gives pain and may produce a show of blood. Patient has loss of appetite, poor digestion, constipation, grows nervous, weak, sleepless, and has bad color, especially under her eyes.

Prognosis.—Such patients are greatly benefited by

proper treatment and some are cured. The course is often tedious, and many times patients become discouraged.

Treatment.—By noting the causes of the disease it is easy to suggest the prophylactic treatment. The tonics, exercise, salines, rest and nervines as given above for chronic metritis are equally indicated here. The applications of tincture of iodine to the cervix, vault of the vagina and endometrium through a dilated cervix once or twice a week will be useful. A thorough curettement under anesthesia and application of solution of nitrate of silver, 40 grains to the ounce, then keeping the patient in bed for a week or ten days will cure some cases not reached by milder measures. The nervous condition is best met temporarily by giving elixir of pentabromide, 1 dram, two or three times a day, or by giving bromide of sodium, 10 grains in water, night and morning. The galvanic current with one pole in the uterus gives good results in some cases.

Chronic endocervicitis (en-do-sir-vi-si′-tis) is a chronic inflammation of the mucous membrane which lines the cervical canal. It is sometimes present when the endometrium is not involved, but very generally both structures are affected.

Pathology.—The mucous membrane here is naturally thrown into transvere folds on the anterior and posterior walls of the cervical canal, which is spindle-shaped in form—larger in the center than at either extremity—and its glands dip down into the muscular structure of the cervix, being more difficult to eradicate when chronically inflamed than is a similar process in other mucous membranes. Its pathology, however, is identical.

Etiology.—Lacerations of the cervix, subinvolution of the uterus, or excessive sexual intercourse may predispose to it. Uterine displacements, chronic pelvic inflam-

mations and all passive congestions in the pelvis tend in the same direction. Specific, septic or diphtheritic vaginitis may lead to it; especially will repeated attacks of this kind produce it. Chronic endometritis will cause it.

Symptoms.—So rarely does this inflammation occur singly and alone that you will seldom be called upon to make a diagnosis where there are no complicating conditions. There will be leucorrhœa of which the patient mostly complains. Sometimes painful menstruation and backache. The speculum reveals the canal filled with a more or less tenacious white or yellowish secretion. The mucous membrane may be slightly protruding at the external os, though not commonly. Occasionally small, irregular lumps or nodules occur on the lips of the cervix about the external os; these are small glands whose ducts being closed fill up with the secretion and thus protrude; they are called ovula Nabothi. In still other cases the mucous membrane about the external os becomes eroded, the epithelium peeling off and leaving a raw, angry surface which is recognized as an ulcerated cervix. In such cases there may be tenderness to touch or pressure.

Prognosis.—These cases always can be cured, but sometimes the course is very tedious.

Treatment.—Since many of these cases have other complications, it is well to remember that often these must be relieved before the endocervicitis can be relieved permanently. The bowels should be kept in good condition, the general health carefully looked after, and the local treatment will be somewhat simplified. Before healing applications can be made thoroughly, the plug of mucous must be removed from the cervical canal. This is best accomplished by using the uterine syringe, which readily and effectually does the work. Or in the absence of this useful little instrument, apply on

a swab of cotton either tincture chloride of iron or Monsel's solution, well up in the canal, which will so coagulate the secretion that you can wipe it out fairly well; then make a free application of tincture of iodine or solution of nitrate of silver, 40 grains to the ounce. In case the canal is not sufficiently open to make a satisfactory application, first use a series of Hank's dilators, which should be kept washed clean and dipped into Churchill's tincture of iodine just before using. The ovula Nabothi should be pricked open with tenaculum or bistoury, and after the secretion is squeezed out it should be touched with the iodine, silver solution or carbolic acid. When the external os presents the granular or ulcerated appearance, the best application after cleansing the parts well, and with cotton swabs wiping away all secretions, is dry tannic acid, 5 or 10 grains, applied directly to the part and held in gentle permanent contact by a cotton or wool tampon for twelve or even twenty-four hours. These treatments may be repeated two or even in some cases three times a week. If the cervix is large and much thickened, a good plan is to paint the entire external or vaginal surface, as well as the canal, with tincture of iodine once a week, and with silver solution or tannin once a week, thus making alternate applications of alterative or irritant and astringent. The hot vaginal douche should not be used more than once a day; generally it is better to use it only on the day following the treatment and omit it the intervening days.

This line of treatment persistently followed for a few weeks will relieve, if not cure, most cases. When it fails, then operative procedures are resorted to with the intention of removing the whole of the mucous membrane of the canal together with so much of the underlying muscular structure as may be necessary to get rid

of the glands which belong to the membrane. For this purpose the patient must be under an anesthetic where she can afterward be placed quietly in bed until healing has taken place. Having the patient thus situated, the parts well and carefully cleansed, let the cervix be split on either side nearly to the internal os, then pulling the lips apart with double vulsellum forceps, with a pair of scissors curved on the flat cut deeply into each lip from the tip back almost to the internal os, thus cutting away all mucous membrane. Now introduce a good-sized drainage tube, glass or firm rubber, through the internal os and sew up the lateral incisions as for a lacerated cervix. A little firm gauze packing about the cervix completes the toilet, and the patient is put to bed. The drainage tube must be kept in place until a new membrane forms to take the place of that removed, which will be in three or four weeks.

NEOPLASMS OF THE UTERUS

The new growths of the uterus may be classed under the following heads:

1. Benign.
   a. Fibroids, or myofibromata.
   b. Fibrocystic growths.
2. Malignant.
   a. Carcinoma.
   b. Sarcoma.

Uterine fibroids are the most common of all growths in the uterus, and they occur in all parts of the body, fundus and cervix. They vary in size, shape, mode of attachment and position, as well as in point of origin.

Submucous fibroids are those projecting more upon the mucous surface and having a wide or sessile attachment.

Interstitial fibroids are those buried well in the thick

walls of the uterus and growing about equally toward mucous and peritoneal surfaces. (See Fig. 41.)

FIG. 40.

A four months' superfetation. This patient had an abortion of two months' fetus; slight sepsis and irregular hemorrhages followed until a thorough curettement was demanded. After having cleaned out the cavity where the first fetus was located, a careful digital examination discovered this larger fetus in its own sac, floating in the amniotic fluid entirely separate from the first and smaller one. For a few moments I hesitated whether or not to rupture this sac and take away the fetus or let the woman endeavor to carry it to term, but soon decided on the former course, and took the fetus away. The amniotic fluid proved to be filled with blood and the fetus already ecchymotic, showing the wisdom of this course of treatment. The woman made a happy recovery.

Subperitoneal fibroids are those beginning closer to the peritoneal coat and projecting more in that direction.

Pedunculated fibroids are those which originally may

have been either submucous or subperitoneal, but which have projected so fully in one direction or the other as to have developed a narrow neck or pedicle. When these pedunculated fibroids project or hang from the mucous surface they are often called polypi. (See Fig. 42.)

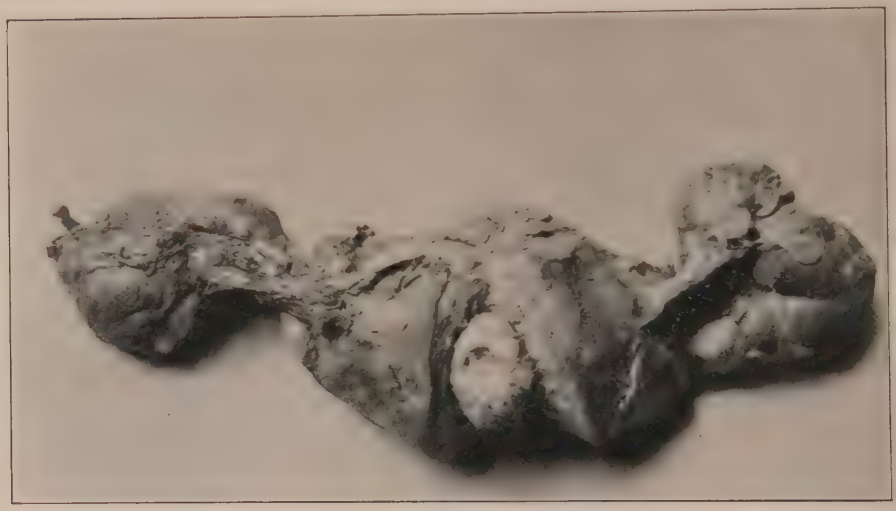

FIG. 41.

Interstitial uterine fibroid with enlarged adherent tubes and cystic ovaries. Woman had constant and excessive flow for three months. Removed by abdominal hysterectomy at the internal os. Patient promptly recovered.

Pathology.—These growths usually are composed of both muscular and fibrous connective tissue, sometimes one preponderating and sometimes the other, so that the term myofibroma is, strictly speaking, the more scientific and exact. The tumor is practically a circumscribed hypertrophy or enlargement of a portion of the uterine wall, having the blood-vessels and nerves more firm and containing less fluid than the surrounding healthy uterine tissue. The connective tissue around the tumor is often so constructed as to form a capsule for it. There

generally is a rich supply of blood immediately about the growth just outside the capsule. They sometimes undergo calcareous degeneration. (See Fig. 43.)

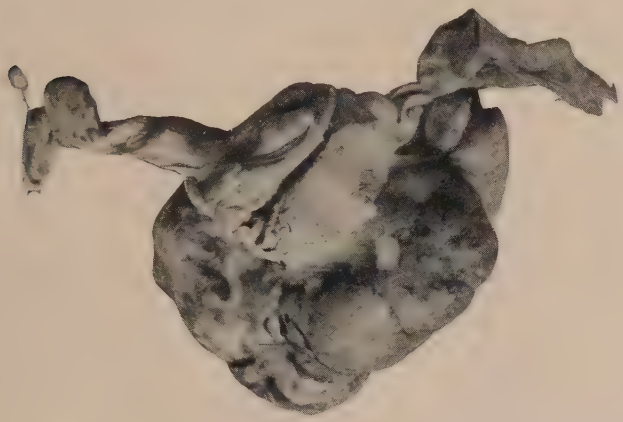

FIG. 42.

Multiple uterine fibroids, showing the subperitoneal pedunculated and sessile varieties, as well as the interstitial variety and one of these having taken on calcareous degeneration. Woman had suffered from menorrhagia and metrorrhagia for years. The last flow had persisted for months without much cessation. Vaginal hysterectomy was done and patient made a happy recovery.

Etiology.—There is no known cause for these neoplasms. They are known to occur during the child-bearing period, and are more common in sterile women than in those who bear children. It is now denied that colored women are any more liable to these growths than white as was formerly taught, but it is equally well established that uterine fibroids are much more common in both than has been believed, so that from 20 to 30 per cent of women who reach forty years of age have at some time a uterine fibroid.

Symptoms.—The first symptom of all fibroids of the uterus except subperitoneal is apt to be hemorrhage. This may be excessive or lengthened flow at the men-

strual period, or a flow of blood from the uterus between the periods gradually growing worse from month to month. The next symptom is apt to be a weight, pressure, bearing down or heaviness in the pelvis of which the patient complains. The next is an enlargement, lump or swelling in the side or lower abdomen which alarms the patient. There may be cramping pains of which the patient complains at times, especially if the fibroid be submucous or a polypus. When the growth is large enough to fill the pelvis there may be actual pain from pressure. Sometimes there is a more or less foul uterine and vaginal discharge, especially if uterine contractions have caused a fibroid to slough away in part. All do not produce symptoms. Some or all of these symptoms cause patients to seek the physician's counsel. Upon investigation he brings out many other symptoms which are common to a number of uterine troubles, and then proceeds to a careful physical examination. He uses bimanual palpation and percussion to separate the tumor from the abdominal organs, and locate its source in the

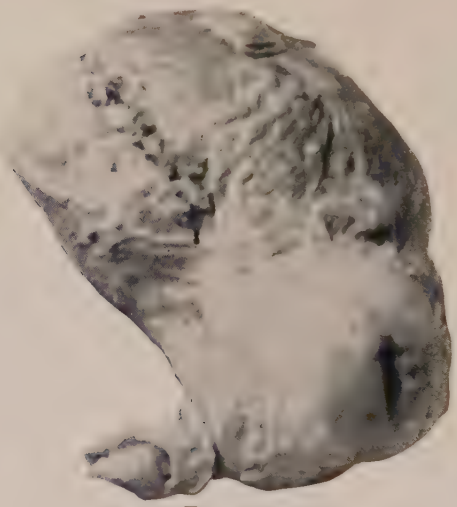

FIG. 43.

Uterine fibroid having undergone calcareous degeneration. Woman six years past the climacteric. Tumor pressing upon the bladder and producing extremely nervous condition. Vaginal hysterectomy done. Two and one-half years afterwards patient hearty, well, and wholly relieved.

pelvis. By auscultation he may help to eliminate a five to eight months pregnancy. Both may be present. Now with two fingers in the vagina and a hand upon the abdomen he endeavors to locate the uterus and determine its connection with or relation to the tumor. He feels the cervix firm if there be no pregnancy. If there be a uterine polypus, he may feel it projecting into the vagina or into the mouth of the uterus. All uterine fibroids, except polypi, are apt to be multiple, and the examining hand or fingers may feel the uterus irregularly enlarged and the nodules hard and fibrous to the touch. There is not usually much tenderness upon pressure, but too much stress should not be laid upon this point. There may be one large subperitoneal or submucous fibroid producing such symmetrical enlargement and blending so perfectly with the uterine walls as to make the diagnosis extremely difficult or impossible. If there be a pedunculated fibroid it may be felt entirely distinct from the uterine body, hard to the touch, and attached only by a pedicle. This uterine fibroid produces neither pain nor hemorrhage. Fibroids and carcinoma may co-exist. Uterine fibroids generally move only with the uterus, and they are not very often adherent to the pelvic wall or other parts. The polypi and submucous fibroids produce the most hemorrhage, and the pedunculated and subperitoneal ones the least. Ovarian growths do not produce uterine hemorrhage, and they are more apt to be adherent to the pelvic wall and surrounding parts.

Chronic inflammatory exudates in the pelvis, though accompanied often by hemorrhage, are more painful, give a different history, and are more firmly fixed in the pelvis, and less movable. Sometimes a rectal examination will help to locate and differentiate a fibroid of the uterus from other tumors. The uterine sound is of

value in some cases in noting the increased depth likely to be present. Malignant growths of the uterus are single and more rapid in their development, and are more common in the cervix.

In doubtful cases repeated and careful examinations should be made both with and without anesthesia. The sharp curette should be called into use in certain cases that the microscope may help to decide between malignant disease of the body and fibroid. Last of all, sometimes an exploratory laparotomy may be required to settle the diagnosis. The most obscure cases are those in which a pregnancy complicates the uterine fibroids; but a careful use of the foregoing, together with delay where there are any suspicious symptoms, unless the case is very urgent, will usually make it clear.

Prognosis.—Generally speaking, the prognosis is good when taken in time and the radical treatment applied before the constitutional symptoms are profound.

Treatment.—The treatment of uterine fibroids may be classified under three different heads. Some do not need treatment.

1. *Palliative.*—Where no attempt is made to really cure the patient, but to render her condition as bearable as possible and prolong life to the utmost without trying to positively get rid of her morbid growth.

2. *Preparatory.*—Where the patient is put upon a line of treatment to get her in the best possible condition for the removal of the tumor with the least danger.

3. *The radical or curative*, in which means are used with the direct purpose of getting rid of all the growths.

The first line of treatment is applicable only to those patients who refuse the more heroic methods of treatment, or who are too far gone to justify their adoption. In such cases the hemorrhage should be controlled by ergotine, 5 grains, or sclerotic acid, 1 grain, hypodermi-

cally injected once or twice a day, together with keeping the patient quiet in bed and using hot astringent douches at a temperature of 115° or 120° two or three times a day. A gallon or two of this hot water may be used and then followed with 15 or 20 grains of tannin or alum in a pint of hot water. Or a more efficient means of controlling the hemorrhage temporarily is to cleanse the vagina and cervix with hot 3 per cent carbolized solution, then with the patient in Sims' position, tampon the cervix and vagina thoroughly with bits of absorbent cotton wrung out of 3 per cent carbolized solution. This tampon, well applied, will effectually control all bleeding, and may be left for two or even more days, after which it should be changed, the parts cleansed and repacked in the same manner. Curettage will temporarily control hemorrhage in many cases. It is a fact, too, that in all fibroids but the polypus it is in controlling hemorrhage that electricity has won its laurels and has been of positive value. It may be applied to secure the caustic effect upon the mucous membrane direct, or with the electric needle the tumor may be penetrated after Apostoli's method; in either case you will get abatement of the hemorrhage, and in intramural or submucous tumors there may be absorption of part if not all of the growth. Then, too, the patient should be well nourished, the bowels regulated and pain relieved. Tonics may be given with benefit, the kidneys and skin made to do their work well, the nervous system quieted, and when possible much of the life should be outdoors. This line of treatment will, if faithfully pursued, cure a certain number of cases; but it will palliate more.

2. *The preparatory treatment* is adapted to those cases not quite ready for radical curative treatment, either because they are not serious enough to appreciate the need of such treatment, or are too serious to endure

the severe ordeal of such a course, but who may be so prepared by a month or six weeks of judicious treatment that they may more safely go through whatever is necessary to secure health. Here the hemorrhage is best controlled by the hot douches and the tampon as already described. Tonics should be given, the bowels regulated, quiet and rest very carefully observed, pain relieved by opium suppositories if necessary, and the patient well nourished. I would like to emphasize the importance of this preparatory treatment in some of these very anemic cases, for it certainly will enable them the more easily to bear the loss of blood and shock due to operation, and very greatly enhance their chances for a prompt recovery, and lessen their liability to either secondary hemorrhage or sepsis.

3. We come then to the *curative treatment* of uterine fibroids. And it may be well to say first of all that I have very little faith in electricity as a curative measure, and do not employ it or recommend it, for two reasons: First, no one is able to tell positively in just what cases it may do good, or the ones in which it may do harm; that is to say, cases just beginning to undergo any form of malignant degeneration are made worse by it and adhesions to surrounding parts may occur so that your patient will be worse rather than better because of the treatment. Second, most men are now coming to believe what MacNaughton-Jones says in his recent work, when speaking upon this subject: "It is not a mode of treatment that experience has taught me can be relied on, and it has many elements of danger." Martin, Mackenrodt, Keith and Schaffer, after a thorough trial, found no cases cured, more than 44 per cent were made worse, and from 4 to 8 per cent died; and because even the most expert could not always make a diagnosis and tell when this treatment was a safe procedure, they,

with many others, have abandoned it as a curative means.

Double oöphorectomy is not often done now, although formerly it had many advocates. But usually this operation is not sufficient, and it is almost as serious as other operations more likely to prove effective. I think most men now are willing to accept Doyen's proposition when he says: "Bilateral salpingo-oöphorectomy by laparotomy is generally abandoned, and is only indicated as a supplement to ovariotomy when uterine fibroids are present which have not been the cause of the graver symptoms."

The pedicle of a polypus may be twisted off or transfixed with a double ligature and tied off, or it may be sawed off with a Thomas' spoon-saw.

A submucous or subperitoneal fibroid may have its capsule split and the tumor removed, and thus a myomectomy done in suitable cases; that is to say, where the growth can be thus dealt with and yet leave a useful organ with healthy ovaries in a woman desiring children, such treatment is justifiable, but if the ovaries are much diseased, or if the uterine body will necessarily be mutilated and left a useless bag membrane, then it is not permissible.

A partial or complete hysterectomy generally is the operation to be recommended in all cases except polypi and clearly marked subperitoneal fibroids including pedunculated ones. As to whether this shall be done by the vaginal or abdominal route must be left to the individual operator. No iron-clad rules should be laid down to guide the profession; but in general we should say that the man who sometimes uses one route and again uses the other, being governed by the indications in each separate case, is the better operator and will achieve the best ends.

Where the growth is not too large to be easily removed through the vagina, it is undoubtedly better to so operate, if the operator is familiar with that method of proceeding. If it be very large and the pelvis small so that morcellation would be required, or if there be wide adhesions, then celiotomy should be done. In the vaginal operation I prefer to use the clamps to control hemorrhage, whereas in laparotomy I use the chromicized catgut. If the patient be very anemic or lose much blood, she should have a prompt saline under the skin, repeated in two or three hours if required. If the tumor be large, and the shock profound, a good firm compress and binder should be put over the abdomen in the final dressing, and a quart of saline used every two to four hours for twenty-four hours, then every five or six hours for another twenty-four hours. I would like to urge this particular feature and method as I have seen it act most happily, and it appears that some operators depend too much in such cases upon strychnine and other stimulants with possibly one or two injections of salines, when they should depend more upon the frequent and persistent use of salines under the skin. In passing, it should be mentioned that this is a most satisfactory method of treatment after removal of large tumors of every kind.

To summarize:

The diagnosis is made by finding:

1. Uterine hemorrhage not otherwise explained.
2. Weight, pressure, and pain in the pelvis.
3. A firm, hard tumor connected with the uterus.
4. Multiple growths in the uterine body.
5. A central enlargement, constantly increasing.
6. The enlargement rarely sensitive to pressure.
7. Peritonitis or fever seldom present.
8. Bladder and bowels disturbed if growth be large.
9. Polypus felt with sound, uterine depth increased.

10. Polypus seen through speculum, felt with finger.

11. Uterine cavity filled with firm growth.

12. Pregnancy carefully eliminated by time or otherwise.

13. Cancer and sarcoma eliminated by microscope if necessary.

Treatment is adapted only to cases with symptoms, and is then:

1. Palliative. Control hemorrhage, use tonics, regulate all secretions, secure rest, and get fresh air.

2. Preparatory. Very much as above, only do not use electricity nor oxytocics hypodermically.

3. Curative. Hysterectomy by the vaginal route when reasonably practical, and the abdominal when the tumor is large or much adherent.

4. Do not fail to use saline injections frequently and persistently if the patient has lost much blood at the time of operation, or if the tumor has been very large.

5. Double salpingo-oöphorectomy is seldom required.

6. Myomectomy in certain cases is justifiable and best.

7. When pregnancy complicates uterine fibroids, leave them alone unless they form a positive obstruction to delivery; for after labor they are apt to disappear during the process of involution. Watch your case carefully at labor, and promptly give ergot and get firm uterine contraction when the child is delivered. If removal must be done, wait if possible until eight and one-half months, then remove, and let nature take care of the child by retaining it to term or prematurely expelling it.

Fibrocysts of the uterus are uncommon; and although they are simply one of the forms of degeneration which fibroids undergo, yet because in some important respects they differ much from the foregoing, it is better to give them a separate description. There may occur one or

more points where serum accumulates in the meshes of the tumor, gradually increasing in size until one large cyst containing many quarts of fluid remains. Or it may be the gradual dilatation of lymph spaces, these filling up with a serum or bloody fluid.

Symptoms.—The growth is slow, does not undermine the health, there is not so much tendency to hemorrhage. Fluctuation may be detected in large ones. The surface is smooth and firm, but not so hard and nodular as fibroids. They sometimes grow to very large dimensions and produce various pressure symptoms. Abdominal dropsy may be present. The uterus moves with the tumor.

Treatment.—The treatment here is removal and that generally means hysterectomy.

CANCER OF THE UTERUS

This term may well be used here to include all of the malignant growths of the uterus. As this is the term best understood by the profession as well as the one commonly used by the laity, and since clinically they cannot always be separated, nor yet even microscopically can they invariably be differentiated, and because all the malignant diseases of the uterus can be classified under either carcinoma or sarcoma, and since the former are in proportion to the latter of 200 or 300 to 1, I may be excused for using this common term.

1. As to the frequency of cancer of the uterus: "According to the report of the Registrar General, there died in England from cancer between 1847 and 1861, 87,348 persons. Of these 25,633 were males and 61,715 were females. About 25,000 of these died from uterine cancer." MacNaughton-Jones says: "It would appear from the statistics of Simpson, Kiwisch and others, that in one-third to two-thirds of all cases of cancer, the

uterus is the organ involved." The investigations of Welch in 31,482 cases of primary cancer show that 29.5 per cent were in the uterus. Roger Williams says: "Cancer is four times as common as it was fifty years ago." While this estimate is undoubtedly too high, it is agreed among all observers that it is markedly on the increase, and especially is this true of malignant diseases of the uterus.

2. As to the age of the patients suffering from malignant uterine disease, and the comparative frequency of carcinoma and sarcoma: Of 3,385 cases investigated by Gusserow, 2,936 occurred between 20 and 60 years of age, and more than one-third of the whole number between 40 and 50. While the varieties of sarcoma may appear at any age, they are more frequent in the extremes of life, and while carcinoma in its varieties may appear at any time of life, it is more common between the ages above given. In 4,115 uterine growths given by Gurlt, 3,449 were cancers, and only 8 sarcomas. In another collection of 1,573 malignant uterine growths of the uterus only 2 were sarcomata. In 320 cases of malignant uterine growths at the Wurzburg clinic 16 were found to be sarcomata.

3. *Etiology.*—As to the cause or causes of cancer, I cannot do better than quote from Cullin's recent and highly valuable work on cancer of the uterus, in which he gives what I believe to be the best and most progressive view upon this subject as it is understood to-day: "The views held by Houseman, Houser and others, that cancer is principally a disease of the epithelium, is gradually gaining ground, and is undoubtedly correct; but we still remain totally ignorant of the causes of this cell alteration. Summing up the various analyses as to the causation of carcinoma, we find that heredity seems to have little influence. Trauma as produced by parturi-

tion bears a causal relation to cancer of the cervix, but not to that of the body. The results of the many investigations, while giving us an increased knowledge concerning the histological structure of carcinoma, have still left its etiology an unsettled question. The weight of evi-

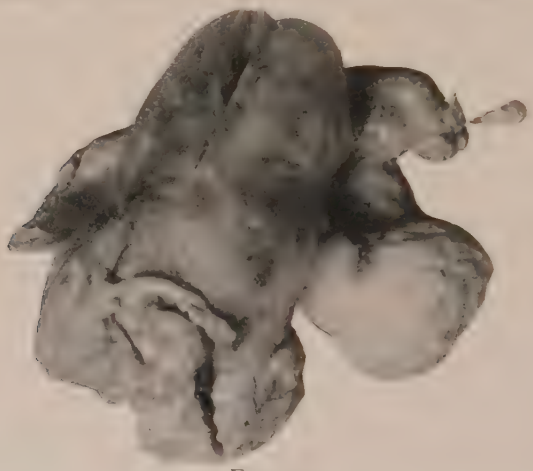

FIG. 44.

Carcinoma of the Cervix. This woman had several children and the cervix had been long torn. She had menorrhagia for several months and had been advised to have a hysterectomy done some months earlier, but refused. The malignant trouble started in the tear and gradually spread to both lips. A vaginal hysterectomy was done by the clamp method, going well out into the vagina and broad ligaments. At the end of 48 hours the clamps were removed and a violent hemorrhage at once began. This was controlled with some difficulty and the patient made a fine recovery.

dence is against the parasitic theory." Reed says: "The causes of sarcoma of the uterus have not yet been determined."

4. *Symptoms.*—The four cardinal symptoms of pain, hemorrhage, fetid discharge and cachexia, I fear, are the ones still depended upon by too many at the present time. The merest tyro in medicine can make a diagnosis by the time these symptoms are present, but then it were frequently better not to make one, but let the patient and her friends remain in blissful ignorance of

her sad condition, for death will usually soon claim his own. It is, however, the privilege and the duty of the twentieth-century physician to be on the alert and make his diagnosis early and immediately insist upon the proper treatment, prevent suffering and save life. Upon this point Winter says: "The diagnosis of carcinoma of the uterus is the most responsible the physician is called upon to make. The price for every failure of diagnosis, or for a diagnosis made so late that the cancer has already become unsuited for operation, is a human life. Under all circumstances, and with all means at our disposal, we must strive to diagnose cancer at the very first examination. To wait in a suspicious case until destructive properties become manifest, as was so frequently done formerly, is to-day a most serious mis-

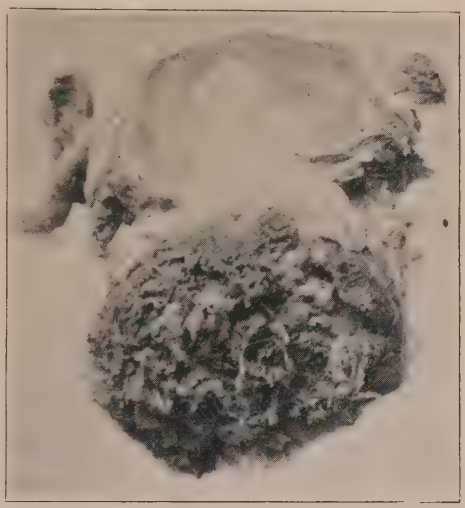

FIG. 45.

Shows an epithelioma of the cervix, presenting the so-called "cauliflower" growths. This woman was a widow 40 years of age, mother of several children. She had a lacerated cervix which began to cause some menorrhagia six months before she came under observation. Although the whole vagina was well filled with the growth and the entire cervix involved, the uterine body and the broad ligaments as well as the glands and other surrounding structures were entirely free so far as could be learned. A vaginal hysterectomy was done by the clamp method. The woman made a fine recovery, the vault of the vagina healing over in apparent perfect condition. The ureters were caught in the clamps, owing to the wide extent of the disease, leaving uretero-vaginal fistulæ, and will require reinserting in the bladder.

take." Any uterine hemorrhage not easily accounted for, especially at or after the menopause, should have careful attention and investigation at once. Any uterine examination which discovers a nodule in the cervix or body, or which finds a readily bleeding surface or breaking down of tissue, demands close attention and further investigation. If from the history of the case or the symptoms or signs there is a suspicion of malignancy, a section of the suspicious point or a curettement with the scraping put directly into a bottle containing equal parts of alcohol and water should be sent to a competent microscopist with a brief history of the case for a prompt opinion. Do not wait for protracted hemorrhages, pain, fetid discharge, cachexia, loss of weight and involvement of glands. Do not attribute hemorrhages at or after the menopause to "change of life"; nor a cauliflower excrescence to simple ulceration of the womb.

5. *Prognosis.*—These malignant growths all tend to a fatal issue in from four months to three years from their beginning. While some die sooner, and rare cases last longer, still the large majority die within these limits, if they are denied proper treatment.

6. *Treatment.*—The treatment is of three kinds:

(1) Preventive. Since so large a proportion of cases have their beginning in lacerated cervices (See Fig. 44), I cannot but believe that we, as physicians, are under a moral obligation to our patients as well as to the public to insist that all of these lacerated cervices, in which there is a reasonable possibility of carcinoma ever being developed, be at once repaired. Instead of advising all women over thirty-five years of age who have lacerated cervices to submit to an annual examination for the early detection of malignancy, as does Howard Kelly, I am confident it would be vastly better for all such women to have the cervix repaired properly. In this day and

age of the world, when the cervical canal is so frequently dilated forcibly with the steel dilators, and when the sharp curette is so commonly used, we should be somewhat cautious in the use of these valuable agencies, lest by too harsh use we inflict just the trauma needed to originate a malignant growth. I should like here to raise this warning note and emphasize it.

(2) The second kind of treatment is the radical. I was greatly surprised to see in MacNaughton-Jones' valuable work the statement: "If very early the disease be detected, and while it is yet limited to the cervix, a Schroeder's high amputation be performed, the results are sufficiently good to warrant the choice of this measure instead of hysterectomy." For he goes on to admit that the cases thus treated have a much larger percentage of returns, and that within two to five years, than those treated by hysterectomy. I prefer to agree with Reed, who I believe states the best and most progressive views of the profession when he says in his recent work: "With the brilliant results of to-day achieved by the complete removal of the uterus, so-called 'high amputation' is practiced but rarely, and should never be employed when the organ is removable." Even Kelly's late operation of splitting the uterus to get more room and carry the enucleation further out to the pelvic wall, is not allowable, for the danger of infecting your raw surface with cancer cells is too great, and the cutting must all be as wide of the growth and its natural channels of spreading as possible. Byrne's method of using the galvanocautery and cutting with it as wide of the growth as is possible gives very brilliant results in his hands, and may come into more general use. But radical treatment in the very earliest stages is to-day the ideal treatment, and then because the disease is local and not constitutional, we may get permanent recovery.

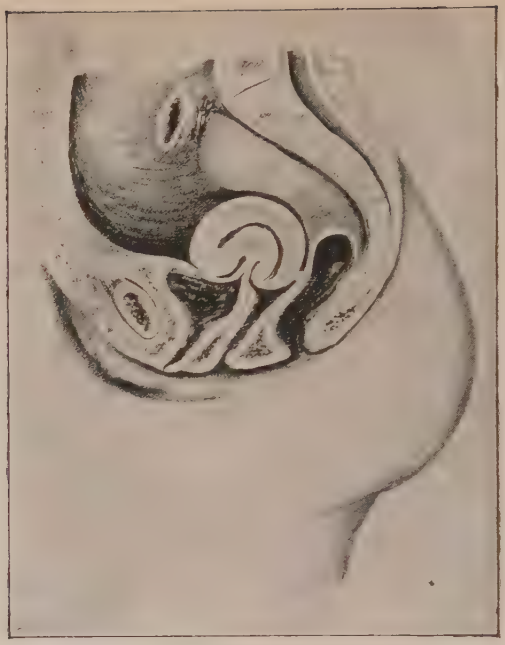

FIG. 46. (THOMAS & MUNDE.)
Anteflexion of the Uterus.

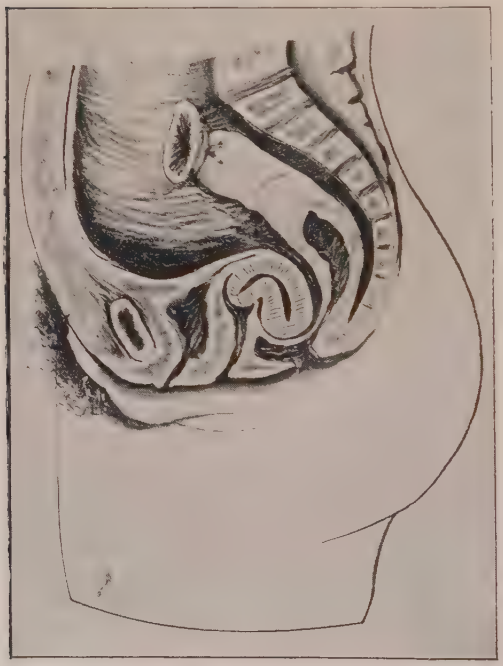

FIG. 48. (THOMAS & MUNDE.)
Retroflexion of the Uterus.

FIG. 49. (THOMAS & MUNDE.)
Retroversion of the Uterus.

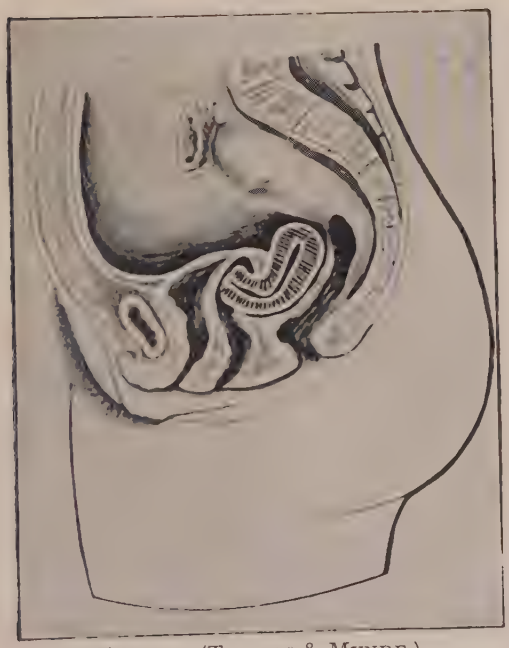

FIG. 50. (THOMAS & MUNDE.)
Retroposition with Anteflexion.

(3) The third line of treatment is palliative in those cases which have passed the curative stage, or those which have gone beyond successful operation by even radical methods. Here, if the hemorrhages are profuse, a thorough curettement and packing with gauze and astringents will give temporary relief. If the discharges are profuse and very foul, not controlled by permanganate of potash, the carbide of calcium used as suggested by Etheridge will afford comfort. For the severe pain rectal suppositories of opium are very beneficial.

INJURIES TO THE UTERUS AND ITS SUPPORTS

The injuries to the uterus may all be classified under displacements and lacerations.

Displacements of the uterus are anteflexion, anteversion, retroflexion, retroversion, right and left lateroflexion and version, with prolapse.

In anteflexion the body of the uterus is thrown forward, the cervix is in its normal position, and an acute angle is formed about the location of the internal os. (Fig. 46.)

In anteversion the body of the uterus is thrown too far forward and the cervix is thrown backward. (Fig. 47.)

In retroflexion the body of the uterus is thrown backward and the cervix is in its normal position, an acute angle being formed about the internal os. (Fig. 48.)

In retroversion the body of the uterus is thrown backward and the cervix is thrown forward. (Fig. 49.)

In right and left lateroflexions the body is thrown to the right or left, the cervix remaining in its normal position with an angle formed about the internal os.

In right and left lateroversions the body is thrown to the right or left and the cervix is thrown in the opposite direction from the body.

Prolapse means the descent of the uterus toward or

through the vaginal orifice. There are three degrees of prolapse: first, that in which the uterus descends so that the cervix is just inside the vaginal orifice; second, that in which the cervix protrudes through the vaginal orifice when the patient is on her feet; third, that in which the whole uterus protrudes through the vaginal orifice and hangs between the patient's thighs. This

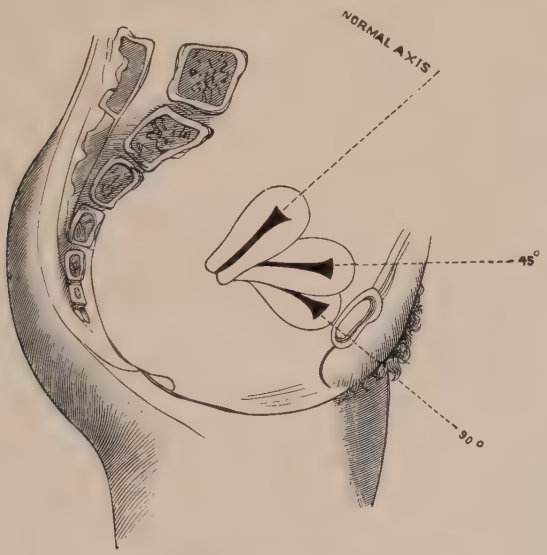

FIG. 47. (THOMAS & MUNDE.)
The Degrees of Anteversion.

last is called procidentia (prŏs-ĭ-den-shi-a) uteri or complete prolapse.

Anteflexion is rather frequent, but many times exists without giving rise to untoward symptoms.

Etiology.—Anteflexion may be caused by a fall, the patient falling forward upon her face. A tight internal os or stenosis of the cervical canal may prevent free exit of the menstrual discharge, and the monthly uterine contractions thus caused may gradually increase the size of the body, normally bent slightly forward, and a flex-

ion sooner or later may be developed. A chronic metritis or endometritis may act in the same manner. It is quite possible, too, that in one whose uterus curves pretty well forward, tight clothing or heavy clothing suspended from the waist, or the midnight dance too prolonged or too frequently repeated, especially at the time of menstruation, would in time produce it. Of course growths in the pelvis or uterus, inflammatory exudates and adhesive bands might also cause it.

Symptoms.—When anteflexion gives rise to any trouble it is apt to be due to pressure on the bladder or constriction at the internal os, and the first symptom may be frequent urination. Many times patients come complaining of "kidney trouble," when upon inquiry it will be found that they simply have frequent micturition. They are also very apt to have dysmenorrhea, because the flexion of the body on the cervix obstructs the internal os, and the menstrual flow cannot escape until uterine contractions upon the retained fluid have produced sufficient dilatation to permit it. Other symptoms and conditions may in time grow out of these. Digital examination reveals the cervix in its normal position, the body thrown forward, and a more or less acute angle formed at the junction of the body and neck. If of long standing there is apt to be some pain as the body is pressed between the finger in the vagina and the hand upon the lower abdomen. This tenderness is due to the fact that there has been gradually developed an inflammation of the endometrium, or possibly of the entire thickness of the uterine wall. If the uterine sound be passed, it will demonstrate the body thrown well forward.

Prognosis.—These cases are generally curable.

Treatment.—Remove as far as possible all known causes or contributing factors in each particular case. Put the patient as nearly as may be in good physical

condition. Introduce a Gehrung pessary, fit the patient accurately (Fig. 51), and have her wear this for two or three months. Also let the patient lie upon her back with hips elevated, especially during menstruation, and retain the urine in the bladder as long as possible without causing too much distress or annoyance, that the body may be forced backward. Keep the lower bowels empty. Do not constrict the waist or allow much pressure upon the lower abdomen. If these measures do not give entire relief, or if there have arisen other conditions making a dilatation or curettement advisable, then under anesthesia dilate the cervical canal and internal os to the extent of one and one-fourth inches in a woman who has never borne children, and one and one-half inches in a woman who has. Make the dilatation very slowly, taking twenty or thirty minutes to reach the full width of the dilators. Turn the dilators over during the last half of the time and by this means

FIG. 51.
Gehrung's Pessary for Cystocle.

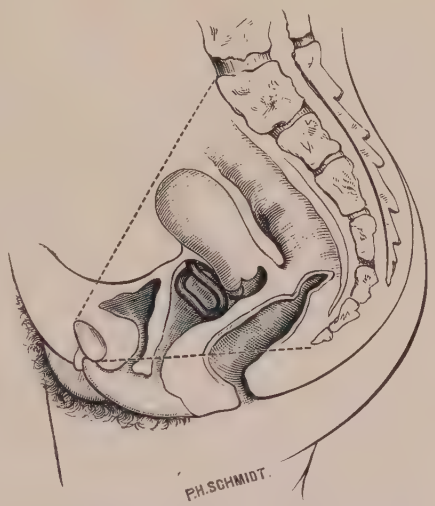

FIG. 52. (THOMAS & MUNDE.)
Gehrung's Pessary for Cystocele in Position (diagrammatic).

throw the body backward as much as possible. Having then curetted (if that is necessary), put in the pessary already referred to, and keep the patient in bed with hips elevated for a week and allow her to wear the support as before directed. If you will notice the figure which shows the Gehrung pessary in place you will observe that two ends rest upon the posterior vaginal wall just inside the orifice and the cervix projects slightly between them; and the two upper curves of the pessary separate the body of the uterus from the pubic bone and keep it well back. Now the easiest way to introduce this pessary is to select one whose size you have carefully estimated to be at least small enough, then having oiled the pessary, with the right thumb and finger catch one of these ends and by firmly holding it push the other end well into the orifice of the vagina, allowing it to turn toward the left side of the vagina as you push it in deeper and at the same time permit the end you hold to enter the vagina toward the right side until the whole pessary is well beyond the vaginal orifice. At this point the pessary is well in the vagina, both ends, however, pointing directly outward toward the orifice; but to do any good they must rest upon the posterior wall as seen in the figure. To secure this position you must now pass the forefinger directly toward the bladder, catch the upper bow of the pessary and bring it forward toward the vaginal orifice. This will throw the whole pessary quickly and easily into its correct position, where it will be retained by the normal pressure of the vaginal walls if it be the right size. Sometimes a second or even a third dilatation will be advisable if a cure is not earlier obtained; but if it be well and slowly done at first and the after-treatment well pursued, such will seldom, if ever, be required.

Anteversion is not as common as the preceding.

Etiology.—This displacement is apt to occur as a result of a fall or strain in a woman who has an inflamed or enlarged uterus, or one in which there is a shortening or contraction of the utero-sacral ligaments which pull the cervix back and tilt the body forward.

Symptoms.—The symptoms are those of whatever accompanying pathological conditions are present plus the indications of pressure upon the bladder, such as frequent micturition and irritable bladder. Bimanual examination reveals the body well forward and the cervix pointing toward the rectum or even toward the hollow of the sacrum.

Prognosis.—These cases can be cured if there are no incurable surrounding conditions.

Treatment.—Improve the patient's general health and as far as possible remove all pathological or abnormal conditions which may in any way contribute to this displacement. If there be metritis or endometritis, cure that. If there be a torn perineum or cervix, repair that. Then the Gehrung pessary is specially applicable in this displacement, and the directions given for anteflexion may be carefully followed out.

Retroflexion is the most common, perhaps, of all the uterine displacements, and should be thoroughly understood by all physicians who expect to treat women.

Etiology.—It often occurs as a result of subinvolution following either normal labor or abortion, but especially so if there has been a slight sepsis following either of these. The body remains too large, the natural supports are weakened or perineum torn, the patient gets up and around too soon, or wears a tight binder, or lifts too much, or goes to work too soon, or in some way overtaxes herself and the body easily drops down beneath the promontory of the sacrum. It may occur from a fall, jumping out of a buggy, especially at menstrual times.

It is not uncommon in school-teachers, clerks and others who must stand many hours in succession as a necessary part of their occupation. Any of the varieties of uterine inflammation predispose to it, for this weakens the natural supports, increases the weight of the uterus and makes it more easily thrown out of position.

Symptoms.—It is wholly inexplicable, and yet absolutely true, that some women with very bad retroflexions have no symptoms whatever. It is a fact, however, that most retroflexions produce symptoms sooner or later, and therefore should be corrected when discovered. Patients are apt to complain of pain in the back, leucorrhœa, weight in the pelvis, dragging sensations in the groins, pain on top of the head, lack of appetite, nervousness, irritability, constipation, and sometimes painful intercourse. Examination bimanually reveals the cervix in its normal position with the body in Douglas' cul-de-sac. The finger in the rectum more readily discovers the fundus out of position. The sound passed carefully locates the body posteriorly instead of anteriorly.

Prognosis.—These cases are generally curable, some by comparatively simple means, and others by more elaborate.

Treatment.—It is important here as in other troubles to view the displacement from a general and wide standpoint. See that the patient's general health is put in the best possible condition and remove as far as possible all exciting causes and complicating factors in the particular case. If there be much tenderness in the uterus or pelvis, this should be reduced by treatment as rapidly as may be. Put the patient in the knee-chest position. (See Fig. 53.) Lift the perineum with the Sims' speculum, and with a tenaculum in the cervix, pull it toward the orifice of the vagina and hold it there while the

patient breathes deeply a few times, when if there are no adhesions, it will drop forward from behind the promontory of the sacrum, and then by taking out the

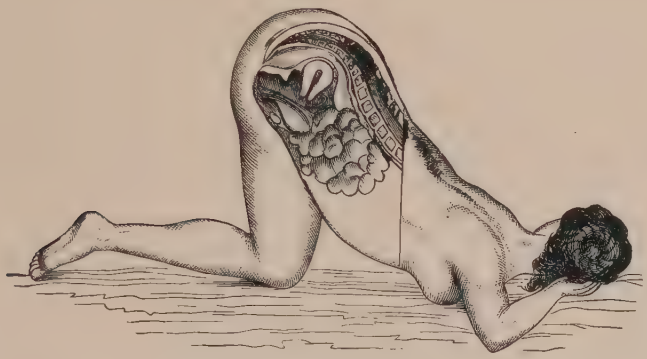

FIG. 53. (THOMAS & MUNDE.)

tenaculum the cervix will point directly upward, showing that the uterus is now in its normal position. Or if the fundus fails to find its normal relation by this simple

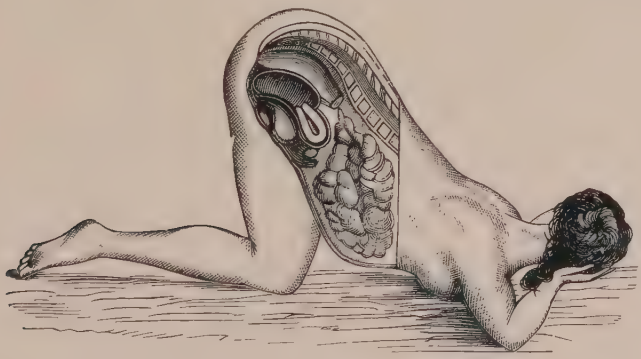

FIG. 54. (THOMAS & MUNDE.)
The Genu-pectoral Position, showing its Action in Retroversion.

procedure, take a firm wad of cotton in the dressing forceps and with that well up in the vault of the vagina behind the cervix you may either crowd the body forward where it belongs or demonstrate its great tenderness

and the fact that it is more or less firmly attached posteriorly by bands of adhesions. Sometimes the sound may be carefully introduced and the body gently thrown forward, or with the finger in the rectum while the patient is in this position you may push the body forward or feel these adhesive bands holding it from going into its position. In any case, whether there are adhesions or not, if there is much tenderness in the body it is well, while the patient is in this Genu-pectoral position, to paint the vault of the vagina freely with tincture of iodine, and then insert as large a dry tampon back of the cervix as the patient can easily wear. Have her leave this in place for twenty-four hours, then remove it, use a half-gallon of hot water and repeat the douche every night. Let her, if possible, come to the office in two or three days, when with her in the same position and the Sims' speculum in place, insert a boroglyceride tampon, to be worn twelve hours, then removed and followed by the hot douche once or twice a day until the next treatment, two or three days later, when the iodine should once more be applied and a dry tampon used as on a former occasion. The treatment should thus be alternated until the tenderness is relieved, when if there are no adhesions, a Hodge or Thomas or Smith pessary should be introduced, and the patient allowed to wear it for two or three months without removal if it is doing well. These pessaries (See Fig. 55) are never to be

FIG. 55. (THOMAS & MUNDE.)
Thomas' Retroflexion Pessary.

used while there is tenderness, nor until the uterus has been replaced, nor where there are adhesions. They should always be introduced while the patient is in the knee-chest position, and the patient should be carefully instructed how to remove them if they cause pain. These pessaries should be no larger than is really neces-

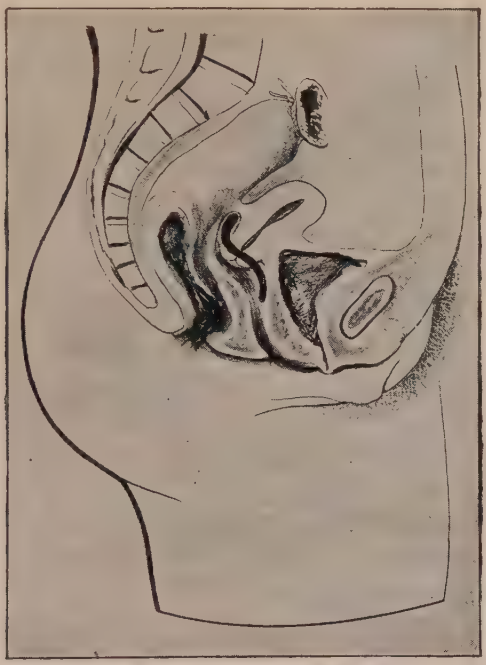

FIG. 56. (THOMAS & MUNDE.)
Showing Lever Pessary in position.

sary to hold the uterus in place, yet must be large enough to so distend the vagina and elevate the posterior fornix as to throw the body forward and let the neck drop easily into the ring. (See Fig. 56.) After the supporter is introduced let the patient lie on her back with knees flexed, and then with the forefinger in the vagina make a careful examination and see if the body is well forward

and the pessary not so tight but the finger can sweep easily around its lower end and two sides. Sometimes a finger in the rectum will more definitely determine whether or not the body is held properly in place.

After the supporter has been worn for three months the patient should carefully remove it and a week later present herself for examination, when if the uterus be found in place, the pessary may be wholly dispensed with. If it is again retroflexed, the support should be reintroduced as before, and the same course pursued as already advised. While the supporter is being worn a hot vaginal douche once a week may profitably be used for cleanliness, but should not be used more frequently unless to meet some positive and special indication. Every pessary should be removed permanently when it has done its work or when it is not successfully accomplishing its purpose. A supporter may be worn for years and always do good while worn and yet fail to so cure the displacement as to make the normal supports efficient without its constant aid. In all such cases every six months the old pessary should be replaced with a new one. In all women with retroflexion, whether having adhesions or not, whether wearing pessaries or not, the Genu-pectoral position for five minutes at a time the last thing at night, the first thing in the morning, and two or three times during the day, except while menstruating and when there is acute inflammation, will be found very beneficial and should not be neglected. It would always be advisable for such cases to lie down a while every day when menstruating. All uterine repositors are delusions and snares, and should never be used. When reductions cannot be made in some of the above ways, it cannot be done or even safely attempted by these dangerous instruments. When there are adhesions or growths to prevent a replacement of

the uterus, or when the flexion is too acute and fibrous tissues in the flexure prevents it being replaced, or when the cervix is so short that a pessary affords no relief, then in all of these conditions numerous operations are in vogue which will afford relief. The adhesions must be loosened by vaginal or abdominal section and the uterus suspended by making a new ligament for it or by shortening the round ligaments. Tumors and cicatricial tissue must be removed, etc.

It is very important to remember that some of these cases of retroflexion of the uterus, with prolapsed ovaries and tubes, marked infiltration and dense adhesions, can be so thoroughly relieved of bad symptoms by the above treatment with iodine and wool tampons locally and iodide of potash or protiodide of mercury and tonics internally, that they are vastly better off than if subjected to severe and radical operations. When sufficient relief is not afforded by this treatment combined with careful massage to the lower abdomen and back, then radical operation is by all means recommended.

I cannot, however, too strongly condemn Schultze's method of blindly breaking up all adhesions without opening either the abdomen or vaginal vault. It is neither a scientific nor safe practice, and therefore should not be employed.

Retroversion would produce many of the same symptoms as retroflexion; probably there would be more disturbance of the bladder, and physical examination would reveal the fundus and body thrown back in the hollow of the sacrum or down in Douglas' cul-de-sac, while the cervix would be thrown forward to press upon the bladder. The treatment, constitutional, preliminary, local and radical, would be very much the same as that for the preceding condition.

Lateroflexion and **version**, whether right or left,

depend almost universally upon some growth, cicatrix, or inflammatory condition in the ligaments or surrounding pelvic structures. Their treatment as well as their pathology, etiology and symptoms merge themselves into that of the condition upon which the particular displacements depend.

Prolapse is a rare condition, except in women who have lost the perineal support. It is said, however, to occur suddenly sometimes as a result of a severe strain like lifting a heavy weight.

Etiology.—It is usually caused by the uterus being too large and heavy for its support. There may be a subinvoluted uterus, a uterus with tumors, or a woman grown fleshy has more pressure than common upon the uterus, and the lack of normal support from below or a tumor attached to the cervix or a heavy vagina not supported by the perineum, which has been torn, drags the uterus down until it is in a state of prolapse of the first, second or third degree. In some cases there is simply a relaxed vaginal orifice and the woman may have no symptoms until years after she has passed the change of life.

Symptoms.—At first the patient merely complains that she feels, when upon her feet, that everything inside of her is coming downward and out. This gradually increases when she is about, and especially when she coughs, lifts anything or taxes her strength, until finally she may find the cervix or even the whole uterus protruding at the vaginal orifice. It often gives rise to cystocele and frequent or difficult urination. An examination at first when the patient stands with her feet slightly apart will reveal the cervix just within the vaginal orifice, when it should be two inches beyond it. Later this examination finds the cervix protruding, and still later the whole uterus drops outside the vagina

carrying with it the anterior and posterior vaginal walls. Even when the patient lies upon her back all of these conditions will be more or less perfectly revealed to sight as well as to the finger.

Prognosis.—These cases generally can be cured, but some of the most severe and chronic ones require some plastic operations.

Treatment.—The preventive treatment should be emphasized properly, for some of these cases are in old

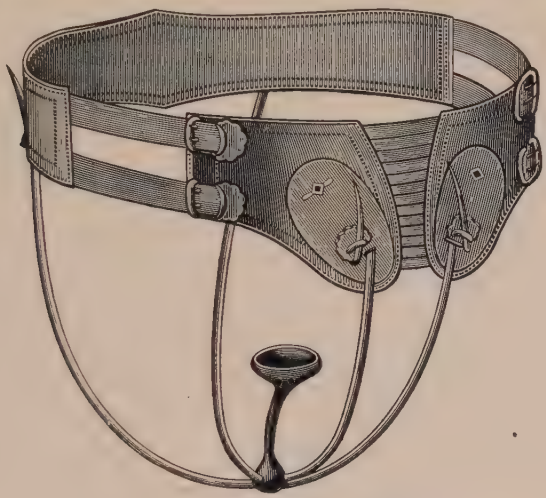

FIG. 57. McIntosh Supporter.

age very deplorable and difficult to relieve, when perhaps a good perineorraphy or colpoperineorraphy early in life would have prevented it. Many such cases may be greatly relieved and made comfortable (though not cured) by wearing a McIntosh supporter as shown in Fig. 57. The patient should put this belt on and adjust the cup and stem to the uterus when she first gets up in the morning, and may wear it all day. At night it should be removed, washed clean and kept in carbolized water 3 per cent, over night. She should use on going to bed

a cleansing douche of hot or boric acid water, then insert a vaginal suppository of tannin, 5 grains, every night until the cervix and vagina become somewhat accustomed to the use of the supporter, when both wash and astringent should be used only as indicated by tenderness or leucorrhœa. When the cervix is torn, ulcerated, tender and greatly enlarged, this condition will require an operation (or in lieu of that careful preliminary treatment) before it can be worn. In such cases cleanse the parts well, puncture any cysts in the canal or upon the lips, apply Churchill's iodine and put in a large, firm, dry wool tampon and apply a T-bandage, then in two days put in 5 grains of dry tannin directly against the cervix and once more apply the tampon and bandage which should be worn two days and followed by a hot douche and the iodine again applied, thus changing off with the tannin until the cervix is in a fairly good condition and reduced in size so that it may rest easily in the cup of the pessary. The Monsel's solution or the nitrate of silver may be used instead of the tannin, and in some cases the iodine may be used only a few times or omitted entirely. This alterative, depleting and astringent line of treatment will make it possible for many of these women to enjoy fairly good health by wearing the supporter as above directed. Of course, where suitable operative procedures can be inaugurated, all pathologic conditions should be removed and torn parts repaired as well as natural supports restored by the simplest and most effective means known. The lacerated cervix may be repaired or amputated. The torn perineum and relaxed vaginal orifice must be restored to their normal tone and condition. Redundant vaginal tissue must be removed. Sometimes a complete vaginal hysterectomy may precede these last operations, but generally I prefer to follow them by a hysteropexy, and have had no occasion to regret this

course. In rare and unusual cases other operations may be called for, but each case must be treated upon its own peculiar merits, and the patient's general health should be improved and looked after carefully.

Lacerated cervix.—The uterine neck is generally slightly torn on either side at the external os by childbirth, leaving it a transverse slit in the woman who has borne children, while in the virgin it is round. Often these tears are so deep as to require some operative procedure to restore the cervix to a normal condition.

Etiology.—It is but fair and right to say that ordinarily these tears occur without the aid and in spite of the physician in attendance. As a rule, he is in no way responsible for it, and could not prevent it if he would. Of course the physician who would forcibly crowd his fingers into the os to hasten dilatation during either abortion or labor might cause these lacerations. Or if the physician give ergot before the os is well dilated, or attempt to introduce any instruments into the cervix, he might easily cause this injury; or if he fails to use the proper remedies when there is a rigid os, he may be held in a measure responsible; but as a general thing we know of no way in which to prevent these lacerations, for we do not know why they occur in a large proportion of childbirths. There may be a tear on one side, unilateral, usually the left, or on both sides, bilateral, or there may be also one or more additional tears in either the anterior or the posterior lip. When there are more than the two lateral tears the laceration is said to be stellate.

Symptoms.—No symptoms are presented at the time of the tear unless it be deep enough to sever the circular artery about the region of the internal os, when there would be violent arterial hemorrhage immediately, and an examining finger might detect the tear and locate the spurting artery, or inspection of the parts would reveal

it. Later, the patient might present herself for examination, when there is apt to be a large cervix with anterior and posterior lips much thicker than normal. The cervical mucous membrane will roll outward and may look like a raw ulcerated surface about the external os. In fact, these cases are too often mistaken for and treated as "ulcerated cervix" or "ulceration of the os." Now to make an absolute demonstration to any one in doubt in a given case, after introducing the bivalve speculum, take two tenacula and catch each lip above and below the raw surface beyond where the apparent ulceration extends and roll the raw surface in by pulling on the tenacula and trying to cover it up as if you believed it should all be in the cervical canal. If you thus succeed in covering up the raw surface, it is then clear that you have at least so much laceration as you have rolled in and covered up. Usually there is endocervicitis with endometritis, and if of long standing there may be numerous large granulations upon the endometrium, and tendencies to hemorrhage are present. There may be tenderness upon pressure in either lip or in the angles of the tear. Patients are often nervous and present numerous symptoms common to other pelvic troubles. It is not uncommon for lacerated cervix to be accompanied by sterility or abortions and subinvolution of the body as well as of the cervix. Cancer of the cervix almost always begins in these tears along the point of injury to the cervix.

Prognosis.—These cases are always curable when properly operated upon in time.

Treatment.—I am not in favor of repairing these tears in the cervix at the time of their occurrence unless the circular artery be torn. In that case the repair should be done to control the hemorrhage, and while doing this an extra suture may be taken without much trouble or

risk and a cure effected. The time may come when every tear of the cervix will be and should be repaired immediately after it occurs, but I do not think the time has yet come when any such teaching should be promulgated. It is, however, a matter of importance that every woman who has given birth to a child be carefully examined within three months of abortion or labor, and all tears located and their repair advised and urged as a preventive of all malignant troubles of the cervix. If the physician will do his full duty by his patients in this respect, informing them of their dangers, he will confer a blessing upon society as well as benefit his patients; for this is the best and most certain prevention of uterine cancer now known to the profession. The sooner the laity understand this, and the more emphatically the profession teach it, the quicker will the death-rate from cancer be markedly lessened. Generally no special preparatory treatment is required, but an operation (trachelorrhaphy) is done as soon as practicable. If, however, there is a large, boggy cervix, and the patient much run down, a course of tonic treatment, regulation of bowels and some local attention to the cervix and vagina may be advised. Puncture all cysts about the os, apply freely Churchill's tincture of iodine, and apply a large dry tampon, which the patient should wear twelve hours, when it may be removed and a half-gallon of hot water used as a douche. The patient should rest for an hour or two every forenoon and afternoon. In two or three days five grains of tannic acid or solution of nitrate of silver, 40 grains to the ounce, or Monsel's solution, should be freely applied and a tampon used as before for twelve hours followed by hot douches night and morning. In two or three days more 20 to 30 grains of boric acid applied to the cervix and held in position by a firm tampon will be advisable, when the iodine may be used

again in two or three days and the whole routine gone over until the tissues are in a fairly good condition and the patient's general health is such as to warrant the operation.

In doing a trachelorrhaphy it is well to have the lower part of the vulva shaved, and this, with the surrounding parts well scrubbed with soap and water, and then with 3 per cent carbolic acid or 1:1000 bichloride. The vagina and cervix must be well washed with abundant soap and hot water, and then with the carbolic or bichloride solution. If the parts are very foul, it may be well in exceptional cases to have them well scrubbed

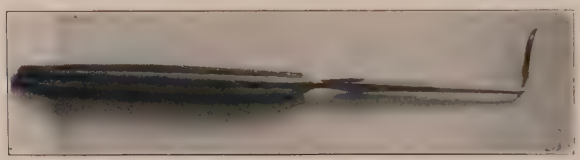

FIG. 58. Henry's Cervix Needle.

the night before and the vagina gently packed over night with iodoform or bichloride gauze, and then again cleansed after the patient is under the anesthetic. Having the parts well cleansed, the internal os and cervical canal should be dilated and a sharp curette more or less thoroughly run over the endometrium to get rid of all unhealthy secretions and granulations. The cavity should now be washed out with sterile water or the carbolic solution and no other applications made to the endometrium unless to meet special indications. A double vulsellum is now used to catch each lip and roll it forward into its normal position and hold it firmly while the cicatricial tissue is cut away, first on the lower or posterior, and then on the upper or anterior lip, with a knife or pair of scissors. The incisions should meet

well back in the angle and remove all of the little cicatrix at this point. When all tears are thus thoroughly pared, then the sutures may be introduced quickly, beginning back at the angle and using two, three or four for each laceration as may be necessary for careful adjustment of the raw edges. For several years now I have used the short, thick cervix needle, and chromocized catgut. To those who still may prefer to use silver wire I would suggest the following as the best way to use it. Take my

FIG. 59. Silver Wire Carrier.

handled cervix needle (Fig. 58) and introduce it through both lips and then put in the eye of the needle your silver wire, and as you withdraw the needle the wire is easily carried into position and may be easily twisted. Or you may use the ordinary needle threaded with silk in this manner. Run both ends of the silk through the eye of the needle from the same side and then pull them far enough through so they will hang much lower than the loop of the thread, as shown in Fig. 59. Now hook your silver wire into this loop of thread which will carry it safely in wherever the needle goes. This is the very

best way to fix a carrier for silver wire wherever any carrier is needed.

Having introduced and tied or twisted all the sutures necessary to make a good apposition, put your patient to bed and keep her quietly there for a week or ten days, merely letting her get up to pass water and evacuate the bowels. Leave no dressing in uterus or vagina, and use no douches for three or four days, when a creolin douche of a half or one per cent may be used daily. If permanent sutures have been used, they should be removed on the seventh or eighth day. The bowels should be kept open by mild laxatives. Tonics and good food should be used freely. It is well if this operation be done a few days after menstruation, though it may be done any time between the periods.

CHAPTER VII

THE FALLOPIAN TUBES

Anatomy and physiology.—The Fallopian tubes are two musculo-membranous tubes or ducts from three to five inches in length, having about the diameter of a large goose quill, extending from the upper angle of the uterine body to the ovary. This is intended to serve as a safe passage-way for the ovum from the ovary to the uterine cavity. It is divided into three parts. The inner one-third, beginning with the ostium uterinum, which opens into the upper angle of the uterus and is so fine as to just admit a fine bristle, is called the isthmus. Extending outward from this is the larger and more dilated part called the ampulla. Then comes the outer extremity, called the fimbriæ, spread out like numerous fingers, one of which with a small furrow in it is attached directly to the ovary, and hence called the fimbria ovarica. In the very center of the fimbriated extremity is the small opening of the tube called ostium abdominale. The Fallopian tubes are composed of three coats: an outer serous, a middle muscular, and an inner mucous, all of which are simple continuations of the corresponding coats of the uterus. The middle coat is muscular, its most external fibers running parallel with the tube, the next layer being circular and near the uterus, with a third layer of longitudinal fibers. The inner layer of mucous membrane, is continuous with the endometrium at the uterine end while it passes over the fimbriæ at the other end to join the peritoneum which covers their outer surfaces. The blood supply comes from the ovarian artery, while the lymphatics unite with

those of the ovary and fundus of the uterus to empty into the lumbar glands. (See Figs. 35, 36 and 37.)

Malformations.—The tubes may be absent on one or both sides. There may be accessory tubes or openings. Sometimes the tube on one or both sides is imperforate.

Diseases.—The first disease of importance is inflammation, or salpingitis, which may be acute or chronic. It may be limited principally to the mucous membrane

FIG. 60.

Hydrosalpinx, showing fimbriated extremity closed and tube distended, with watery fluid.

or extend to the muscular or even to the peritoneal coat. In the acute form all three coats usually are quickly involved. When from the violence of the inflammation or other cause both ends of the tube become closed so that the tube becomes filled or distended with fluid of a purulent nature, it is called pyosalpinx; if the fluid be blood, it is known as hematosalpinx; while an accumulation of serous fluid is called hydrosalpinx. (Fig. 60.)

Etiology.—Salpingitis is an all too common complaint. It is often caused by gonorrheal infection which has traveled through the uterine cavity and then out

through one or both tubes. It may follow septic infection from abortion, labor, curettement or other operation upon the uterus. The introduction of any unclean instrument may bring it on. Possibly too frequent coition, though pure, may cause it. Suppression of menstruation may bring it on. Infection may reach the tubes and set up an inflammation by continuity of surface, by lymphatic channels or by the circulation. Thus there may arise tubercular infection.

Symptoms.—In all of the acute varieties there is a history pointing directly toward some one of the causes given, fever and constant pain. Examination reveals marked tenderness along the side involved as you make a bimanual investigation. There may be decided enlargement along the course and in the region of the tube. More or less fixation of the uterus and great pain upon trying to move it. There will, of course, be numerous other symptoms which are common to all acute inflammations in the pelvis, but these are the ones upon which we must depend to give a positive diagnosis of acute salpingitis. Where the tubes become large, heavy, and filled with serum, blood or pus, they are very apt to drop down along the side of the uterus and behind the broad ligaments, where they may become adherent and easily outlined by a finger in the rectum. It should not be forgotten, too, that often in the acute cases there is associated acute metritis, cellulitis and pelvic peritonitis, so that symptoms are complex. The chronic forms may be preceded by the acute, or there may be varieties which are so from the beginning. In all cases endeavor to get a clear history, though unfortunately this cannot always be relied upon. Patients may complain of more or less pain in the side, constant or intermittent. Likely the pain will be more severe at the time of menstruation. There will be leucorrhœa. Some-

times an irregular profuse and then scanty leucorrhœa. There may be accounts of several acute attacks of inflammation in the pelvis, confining the patient to bed for a week or two every few months. There may be a family or personal history of tuberculosis. A general failing of the health and loss of flesh, etc.

Physical examination will now locate a thickened tube, tender, possibly about in its normal position, but apt to be prolapsed and even adherent. The tube may roll under the fingers like a firm and enlarged cord in interstitial salpingitis; tubercles may sometimes be felt upon it in the tubercular variety, especially if felt through the rectum. If it be filled with pus, serum or blood, it may be large and boggy-shaped like a sausage or even very much larger. It will be tender, but not excessively so as in the acute form. The ovary may be at times outlined separate and distinct from it. Fluctuation may or may not be present. It is just as true here as in the preceding, that very often there are numerous other pathologic conditions associated with chronic salpingitis, such as retroflexed, adherent uterus, adherent and inflamed ovaries, etc., complicating the symptoms with those of the accompanying troubles. But even here you need not hesitate to pronounce your diagnosis as just outlined.

Prognosis.—These cases are generally curable by treatment or operation.

Treatment.—The treatment resolves itself into that of the acute and of the chronic forms. In the acute variety put the patient to bed, open the bowels with Rochelle salts or citrate of magnesia, and apply the ice-bag constantly over the seat of pain. Hot douches properly given every two or three hours in quantities of a gallon or two at a time are very beneficial, and are especially so if the patient will not bear the ice-bag and

the hot water-bag must be used. It is also true that if the patient will use the ice-bag and allow ice or cold water douches in the very beginning, great good will speedily result. Allay excess of pain with codein, antikamnia or phenacetine. Elevate the hips. In a few days these symptoms will subside or go on to formation of a pyosalpinx, which will be manifest by the continuance of rapid pulse, fever, pain, possibly a chill, a large, tender, boggy if not fluctuating mass on the side pressing upon the vault of the vagina. Here the patient should be given an anesthetic, the vagina well cleansed, and a pair of sharp-pointed, long-handled scissors curved upon the flat pushed directly up into the mass, spread open, and forcibly withdrawn, when with the dressing forceps the opening may safely be still further enlarged to provide a free exit for the pus. The cavity should be thoroughly washed out, the finger introduced, and all partitions sufficiently broken down to make one large pus cavity. Now introduce two good-sized (large as the finger) drainage tubes and pass alongside of them well up into the cavity a large strip of iodoform gauze, and a second larger piece into the vagina to prevent the tubes being expelled during vomiting, straining, or movement of the bowels. In forty-eight hours remove the gauze, leaving in the tubes, irrigate the cavity with carbolized or creolin water, 1 per cent, insert a strip of gauze again, and leave it for twenty-four or forty-eight hours. Keep the patient quiet in bed, open the bowels daily, give nourishing and easily digested food, allay pain, nervousness and sleeplessness by codein or sulphonal. Keep the tubes in until the cavity has fairly well closed and there is little or no discharge, which is usually a week or ten days, when they may be permanently removed and the patient allowed to gradually get up and about. Of course this leaves a permanently crippled

tube. To have an absolutely perfect result, some five or six weeks later, after all fever and other acute symptoms have disappeared, the abdomen may be opened and all adhesions broken up and the diseased and crippled structures removed. This, however, should never be done in the acute stage, and I do not recommend the secondary operation unless there are remaining symptoms or evidence of invalidism which justify so grave an operation. The first operation cures your patient of her acute trouble, and she may never have another attack and may enjoy good health so that you are not warranted in doing the secondary operation simply because you know there remains some pathologic condition. No man is ever justified in opening the abdomen in these acute cases, for if he does the majority of his cases will die: when if he properly operates through the vagina, they will all get well.

In the chronic form, where the whole tube is inflamed and thickened, an occasional fly-blister applied to the skin over the location of the tube or getting up thorough counter-irritation by repeated and free applications of compound tincture of iodine, or in some cases even the frequent application of an active mustard plaster will prove very efficient.

At the same time the application of Churchill's iodine twice a week to the vault of the vagina in the immediate vicinity of the tube will be very helpful. Tonics, regulation of the bowels by careful attention to diet or the use of mild laxatives, requiring the patient to take gentle outdoor exercise, an hour of quiet rest lying down in the forenoon and afternoon, but especially during menstruation, and avoidance of intercourse for several months, are all important steps toward a cure. When this treatment faithfully pursued does not effect a cure or satisfactory relief, or in cases of tubercular salpingitis (Fig. 61),

removal of the tube by operation (salpingectomy) is advisable.

A chronic pyosalpinx, hydrosalpinx or hematosalpinx is best treated by removal, sometimes through the vagina, most frequently by abdominal section. Conservative work here is often justifiable as was that in the following case: Mrs. B., aged 30 years, married six years, never pregnant, but very anxious to bear children, although for years had been a constant sufferer from some form of pelvic disease. Examination revealed both tubes very

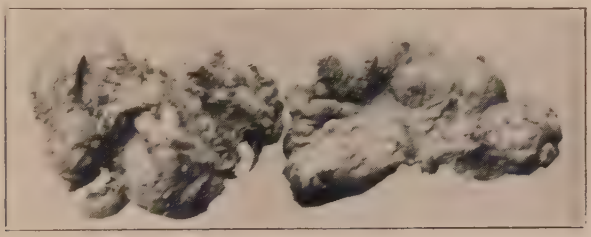

FIG. 61.

Tubercular Tubes and Ovaries. There were many tubercles scattered over the uterus, pelvic walls, intestines and peritoneum of abdominal walls, but these were most seriously involved and were removed. There was no ascites. Patient had been under treatment for some time but gradually getting worse. She made a good recovery from the operation, and persisting in the internal treatment, she gradually got rid of her pelvic and abdominal pain, as well as the fever, and gained in flesh and strength until quite well.

much thickened from chronic salpingitis. Operation was advised. The abdomen was opened, adhesions were broken up, and the tubes and ovaries brought into view, when it was found that both sides were seriously involved in a chronic inflammation. The fimbriated extremity of each tube was obliterated by adhesions, the abdominal openings firmly closed, and the tubes adherent to cystic ovaries. The right side being in the most hopeless condition salpingo-oöphorectomy was done upon that side. The tube upon the other side was loosened from the

ovary and the end of the tube split open so that the mucous and peritoneal membranes could be united by suture and thus give a patulous and permanent opening for the renewal of the function of the tube. The canal of the tube was then washed out with sterile salt solution, the abdominal wound closed, and the patient put to bed. She made a fine recovery, was much relieved of her pelvic and other symptoms, but best of all, to her own and her husband's delight, eighteen months thereafter she gave birth to a fine baby boy. Now although there probably remains some pelvic trouble, for it is hardly likely that these parts after so many years of chronic inflammation would become perfectly normal, still this woman and this family are vastly better off for the conservative work done than if more radical work had been done, and that, too, in my opinion, even if later a second operation should be required to get rid of this crippled tube. So far as I know, there is no danger that this will be required; but if it should, I will still favor the first operation.

NEOPLASMS

The new growths of the Fallopian tubes are few and are apt to occur secondary to troubles of more importance. However, occurring primarily or secondarily, they are as follows: cysts, fibroma, papilloma and lipoma of the benign and primary forms. They are usually small and give rise to few symptoms, and are not generally recognized except when operating for other more serious troubles.

Of the malignant growths, carcinoma and sarcoma may occur primarily in the tube, but generally are secondary to uterine or ovarian malignant disease. They have no symptoms by which they are recognized

until surrounding parts are involved and then they are rather merged into those of the more extensive disease.

As to treatment, the benign growths should be removed conservatively, retaining, if possible, the entire tube so that its function may not be impaired. The malignant growths demand early and wide removal as the most conservative and only treatment.

CHAPTER VIII

OVARIES

Anatomy and physiology. — The ovaries are two oval-shaped bodies situated on either side of the body of the uterus and attached to it by the ovarian ligaments which are small musculo-fibrous cords an inch or an inch and a half long and buried in the broad ligament. The ovary itself is rather inserted into the posterior layer of the broad ligament, and is about one and one-half inches

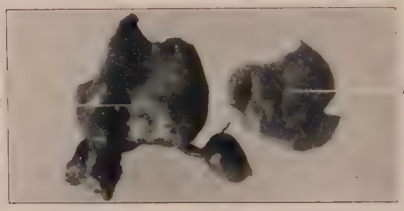

FIG. 62.

Shows (*a*) Graafian follicle after recent menstruation and large hematoma, which were removed by resecting that portion of the ovary; (*b*) is a small sclerotic ovary which had caused the patient incessant pain for more than a year and no relief came from treatment. Its removal brought prompt and satisfactory relief.

long, one inch broad and one-half inch thick. In the young girl approaching puberty the surface of the ovary is perfectly smooth and even, but with each ovulation a little irregular scar is left on the surface, so that with advancing age there comes normally an increasing roughness of the surface. If a normal ovary be split open from end to end through its thickest diameter it will be seen to be made up of an outer or cortical substance called the parenchymatous zone, which is rather white and clear, and an inner deeper part called the medullary

substance or vascular zone, which is darker in color. The parenchymatous zone is made up of muscle fibers and connective tissue in which is located the ovisacs, the large and small Graafian follicles. The deeper or medullary part of the ovary is also made up of muscular and connective tissue; but this latter is much looser than in the outer layer. At each menstruation an ovum in a Graafian follicle matures and escapes on the surface of the ovary, being about two millimeters in diameter, or large enough to be seen with the naked eye. The Graafian follicle attains about one-half inch in size and is quickly filled with a blood-clot when the ovum escapes. This clot gradually undergoes changes by which it contracts and becomes organized until a depressed cicatrix permanently marks the site of the follicle and its rupture. The ovary is richly supplied with blood from the ovarian artery. It has also a rich supply of lymphatics which unite with those of the tubes and body of the uterus in emptying into the lumbar glands. (See Figs. 35, 36 and 37.)

The inferior hypogastric plexus affords the nerve supply. The function of the ovary is to produce and expel the ova for the propagation of the species. When menstruation or ovulation is about to take place the fimbriated extremity of the tube seems to grasp and fairly well inclose the ovary, almost as if by intelligence, ready to receive the ovum when it escapes from the ovary, so that it may be conveyed through the tube into the uterine cavity.

Malformations.—The malformations of the ovary may be classified under the following heads:

1. Absence of one or both ovaries, when the uterus is absent, or when only one horn is developed.

2. Rudimentary ovary, when there is partial or imperfect development of other sexual parts.

3. Supernumerary ovaries, when more than two are present in the same woman. They may be very small, but are found near the peritoneal border of the normal ovaries, though sometimes a third ovary is found of good size and attached to the uterus by its own ligament. Sometimes an ovary is divided by fissure into two distinct parts, so that it is really a fissured ovary rather than supernumerary.

4. Hypertrophied ovary occurs sometimes in the new born, so that the organ may be twice its normal size, due probably to a fetal inflammation in which all of the structures, particularly the connective tissue, are greatly increased so that the Graafian follicles may be wholly or in large part obliterated.

DISEASES OF THE OVARY

Oophoritis (ō-ō-fō-rī'-tis) means an inflammation of the ovary and may be either acute or chronic.

Etiology.—The acute variety is not so very common, but may occur as a result of gonorrheal infection, suppressio menses, infection following abortion or labor, or from infections following operations upon the uterus. While the ovary may become inflamed through continuity of tissue during a pelvic peritonitis or by infection through the lymphatic channels, still the most common way is through the endometrium and then through the tubes. Sometimes it follows mumps.

Symptoms.—There is pain, fever, rapid pulse, great tenderness upon pressure as an examination is made per vaginum or rectum. The ovary is enlarged and is apt to prolapse early in the history of the case. If resolution does not promptly ensue there will develop more or less widespread pelvic peritonitis or an ovarian abscess or both. (See Fig. 63.) When an abscess forms there will be increased fever, chills, marked tenderness, enlarge-

ment, and possibly fluctuation. Sometimes the abscess fills the pelvic cavity sufficiently to crowd the uterus well to the opposite side and forward. Such an ovary becomes firmly adherent to the tube, broad ligament,

FIG. 63.

Is an Ovarian Abscess with small Pyosalpinx. The woman from whom this was removed was 38 years of age, had suffered from an occasional menorrhagia for several years. Had some distress and pain in the pelvis most of the time. She was the mother of several children, looked strong, hearty and robust. Careful examination revealed a torn cervix, an endometritis, with metritis, a large tender mass adherent to the left and back of the enlarged uterus, which was crowded forward and to the opposite side. No fever or history of any acute pelvic trouble. Abdominal section was made, the mass enucleated and the opposite tube and ovary being inflamed and firmly adherent, they were also removed. This patient made a very satisfactory recovery despite the size of the abscess and the firm adhesions.

uterus and pelvic wall. It is not quite so fixed as a pyosalpinx or abscess of the broad ligament is apt to be. The ovarian abscess may open into the vagina, bowel, uterus or general peritoneal cavity.

Prognosis.—These cases of acute oophoritis do not

often lead to a fatal result, though many times they leave chronic pathologic conditions in the pelvis which give rise to constant suffering.

Treatment.—The important treatment is prophylactic, by avoiding intercourse with a man who has either an acute or latent gonorrhea, by preventing infection with sounds or other instruments, as well as such as may follow abortions or labor. All of these are just as important preventive measures here as they are in pyosalpinx. During the attack keep the patient quiet in bed with an ice-bag over the region affected; cold vaginal douches here in the very early stages, and cold water by the rectum are beneficial. Salines to empty the bowels freely and keep them open are useful. Pain, if not relieved by these measures, can best be overcome by a rectal suppository of opium, 2 grains, once or twice a day.

When an abscess forms, open and drain through the vagina precisely as described above for acute pyosalpinx, and do not open the abdomen until all acute symptoms have subsided for several weeks, and then only when the adhesions or chronic inflammatory conditions justify this important operation. The opening in the vagina should be kept widely open until the cavity above has contracted and the discharge has practically disappeared. The wound may thus be kept open by leaving in two or three good-sized drainage tubes or a large piece of gauze. In some of these cases, after opening freely and washing out the cavity thoroughly, it is advisable to introduce the sharp curette and carefully but efficiently go over the walls of the abscess and thus promote rapid healing.

Chronic Oophoritis.—*Etiology.*—The chronic form often follows the acute, and then has the same causes; but many times it originates independently. Any of the causes which prolong a normal pelvic or ovarian conges-

tion predispose to it and eventually may cause it. Excessive intercourse, prolapse of the ovary, too long standing, working overtime or strength at the sewing machine may cause it. A retroflexed uterus in time may bring it about.

Symptoms.—It is often found in both ovaries, but generally begins in one or the other. The left is most frequently involved, first, on account, possibly, of the rectum and sigmoid flexure, and especially of the left ovarian venous supply being so different from the right. There is more or less constant pain in the iliac fossa corresponding to the ovary affected. Pain in the back or down the thigh, even reaching the knee. Menstruation is sometimes irregular or profuse. The pain is increased a few days before the periods and may last some days after. Patients become nervous and irritable; sleeplessness may appear, appetite becomes erratic, constipation is present, and sometimes intercourse is painful. Examination reveals the ovary tender, and it may be much larger than natural, or a cirrhotic condition may have developed, when it will be much smaller. It may be freely movable and in its normal position, but many times it is prolapsed and movable or adherent. The cystic ovaries so often found are usually due in the first place to chronic oophoritis in which cystic degeneration has taken place. Cysts are seen at times to form in a corpus luteum; again the chronic inflammation so thickens the cortical layer of the ovary that the Graafian follicle cannot burst through and let the ovum escape so that here a cyst is formed, and thus in various ways the ovary becomes studded with these cysts which vary in size from a very small pea

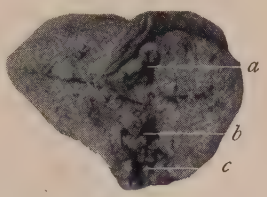

FIG. 64.

Small Cystic Ovary: *a*, *b* and *c* show Cysts opened.

to as large as a filbert. The truly cystic ovary, therefore, may be no larger than a normal ovary, or it may be twice as large. It may have considerable healthy ovarian tissue in it or very little.

Prognosis.—These cases are capable of great relief under judicious treatment, rarely shorten life, but are seldom entirely and perfectly cured. Such patients need tonics, laxatives and sedatives wisely administered. Many of these cases will bear well, right in the beginning of treatment, two compound extract of colocynth, ipecac and blue pill at bedtime, followed next morning by a

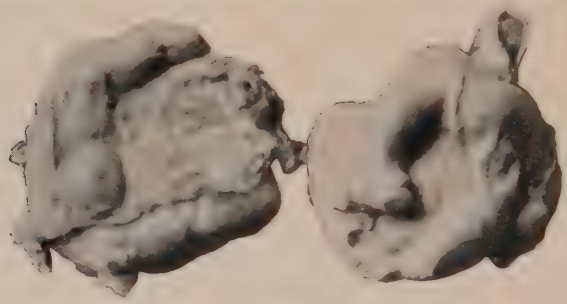

FIG. 65.

Cystic Ovaries and Adherent Tubes. Very little healthy ovarian tissue, numerous cysts varying in size from a pea to a hazelnut.

Seidlitz powder. Then each morning thereafter a glass of Apenta water upon rising or Apollinaris water in the same way. Compound tincture of cinchona, 1 dram, after each meal, or elixir of gentian and iron, 1 dram, may be given as tonics. For those whose stomachs will bear it nothing is better than 15 drops of tincture of chloride of iron in water after meals. Müeller's pure cod liver oil in dram doses during or just after meals or one dose at bedtime is very efficient if properly given. I may say here that the best way to give cod liver oil to anybody, and for any purpose, is the following: Take a half glass of some *thin* extract of malt, and pour one

or two drams of the oil upon this, letting it float upon the top, as it will unless you stir it, and then let the patient drink it all. The oil will go first and the malt will follow it, so that the patient will get no taste of the oil or very little, and she will have the tonic effect of the malt, which is very valuable in many cases, and never contraindicated where the oil is required.

Patients with chronic oophoritis should not be on their feet too much or run a sewing machine, but should rest by lying down during the day for an hour or two, and especially during the monthly periods. They should take gentle outdoor exercise. They may have the tincture of iodine applied once or twice a week to the vaginal vault, or occasionally, perhaps once a week, the 10 per cent icthyol-glyceride tampon applied in the knee-chest position. A fly-blister to the skin over the region of the ovary, about two by three inches, once in two or three weeks, will afford marked relief; or in lieu of this, a good strong mustard plaster every second or third night for a time will prove helpful. In patients vigorous enough to bear them, the daily or semi-weekly cold shower or sponge baths or the cold stream to the spine will be found very efficient. Abstinence from intercourse is important, and a change of climate, scenes or surroundings for a few months will be important in some cases. If nervousness still remains, the bromides two or three times a day, especially sodium bromide, 10 grains, with tincture of hyoscyamus, 15 gtts. in water three times a day, will give decided relief. It may be wise in some cases to give sulphonal, 25 grains, or chloretone or trional, 10 grains, at bedtime for a few nights.

If the ovary is prolapsed, but not adherent, it will do some good to apply the local treatment in the knee-chest position, then use a large dry wool tampon, and have the patient wear this for forty-eight hours, when it should

be removed on going to bed and a hot creolin douche taken. The patient in this case should be carefully taught the correct knee-chest position, and urged to use it for five or ten minutes three times a day. Kneeling thus on the floor by her bedside when the clothing has been thoroughly loosened about the waist, with a firm swab of cotton in the uterine dressing forceps, the physician may, after raising the perineum with the Sims' speculum, and before applying the iodine, get the patient to breathe slowly and deeply a few times and with the swab gradually work the ovary up into its place where it may be fairly well retained by the tampon.

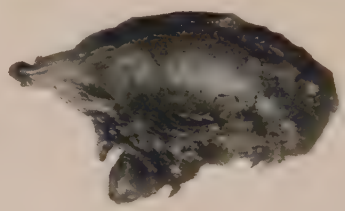

FIG. 66.

Degenerated Ovary surrounded by and adherent to the Tube. Woman had the other tube and ovary removed some months ago for a like condition. At that time this ovary was apparently fairly healthy and was left. Since then constant and severe pain had developed in the side where this trouble existed and its removal followed. Patient made a satisfactory recovery.

This line of treatment faithfully pursued will very greatly relieve these patients and will many times make life quite bearable. The use of the static current down the spine and through the pelvis, or the galvanic current applied with one pole in the vagina and the other over the lumbar region, will be useful in some cases.

Where relief is not sufficiently secured by these means, or where these measures cannot be properly applied and the disability or suffering is great enough to justify removal, the curative treatment is ablation of the diseased ovary either by the vaginal or abdominal

incision. If the corresponding tube is diseased, adherent or prolapsed, it should also be removed; otherwise it may be left. It is important for the physician to remember that the sooner these measures are begun in the treatment of any case and the more vigorously they are pushed, the more likely they are to be successful.

Displacement.—When the ovary is prolapsed without being seriously diseased it should be replaced and so retained as nearly as possible by the means already advised. If these fail, then before it becomes diseased requiring removal, or in a case where operation was begun

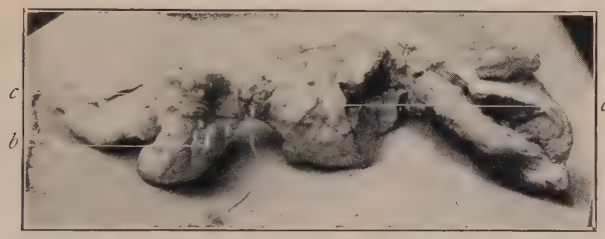

FIG. 67.

a, Uterine Body. *b*, Fibroid Ovary. *c*, Adherent Tube. Fibroid ovary adherent to tube and uterus. Patient had a violent uterine hemorrhage. Curettage showed evidence of carcinoma. By abdominal section the tubes, ovaries and uterus were removed after loosening the ovary from the pelvic wall to which it was firmly attached. Patient made a splendid recovery.

with the idea of removing a prolapsed diseased ovary, if it be found fairly healthy, then it should be carefully suspended from the sides of the uterus or upper part of the broad ligament near the uterus; for this gives good results and preserves all of the functions.

NEOPLASMS

The new growths of the ovary may be either cystic or solid, and both may be either benign or malignant.

(*a*) **Cystic tumors** of the ovary may be large or small. Occasionally they are found as small as a hen's

egg (see Fig. 68) and again larger, sometimes weighing as much as or more than the patient after its removal. Once more, these cystic growths may be unilocular or multilocular; there may be one cyst or many cysts containing a variety of fluids. The dermoid

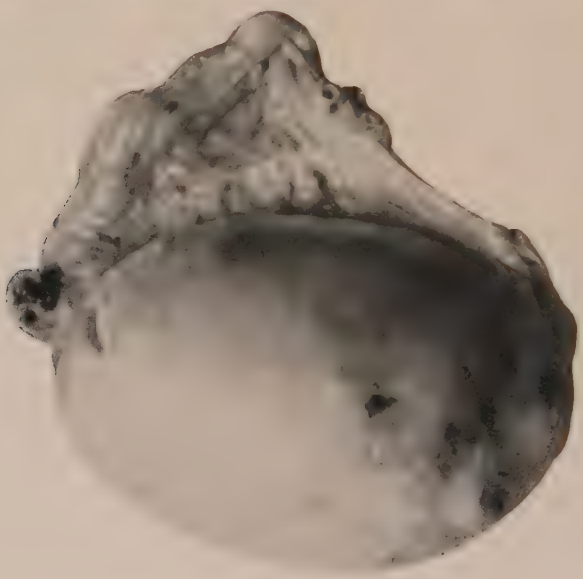

FIG. 68.

Small Ovarian Cyst. Woman 42 years of age, very nervous, severe occipital headache. Retroflexed uterus with both ovaries prolapsed in Douglas' cul-de-sac, one cystic and this one a cystic tumor. Both tubes and ovaries removed, uterus suspended from anterior abdominal wall. A good recovery followed.

cyst of the ovary is not very unusual and is generally multilocular. Hair, bone, teeth or sebaceous matter are found in one part of them, while others may contain a grumous fluid, and still others in the same tumor contain a clear, thin fluid.

Etiology.—These growths appear to start in a Graafian follicle, but just why they should develop we are not yet in a position to state. Sometimes these growths take

on a calcareous papillomatous or even cancerous degeneration.

Symptoms.—The symptoms vary with the kind, size and stage of the growth. These tumors sometimes grow to considerable dimensions without giving rise to any disturbance whatever. Often the first thing to attract the patient's attention is an enlargement in the lower abdomen, generally more marked on one side than the other. She may feel a weight, heaviness or pressure in the pelvis even before the tumor appears above the pelvic brim. There may be diminished menstruation, or the patient may miss one or more periods, especially if both ovaries are involved, in this respect differing from uterine fibroids, where the flow is apt to be increased in amount as well as frequency. From the pressure of the tumor sometimes it produces local peritonitis with adhesions. Again, it may be very freely movable in the pelvis or in the abdominal cavity. There is generally very little free ascitic fluid in the abdominal cavity until cancerous degeneration begins. Much fluid, especially if bloody, is apt to indicate cancer (Fig. 69). The tumor may have a very wide or sessile attachment, even growing downward into the broad ligament, when it is called an intraligamentous cyst; or it may have a very long, slender attachment, when it may be moved about freely in the abdominal cavity. Upon palpation and percussion there may be found fluctuation, although this is not easily detected. Percussion reveals tympany in the flanks rather than flatness which it would show if there were ascites. The tumor is not tender to the touch, and bimanual examination may reveal the location of the attachment of the tumor or its pedicle at the ovary. When the tumor is very large it generally will first fill the pelvis quite full, pushing the uterus and other parts forward and to the other side, often crowding the bladder so that urination

FIG. 69.

A large Ovarian Cyst whose walls have undergone malignant degeneration. This woman was 35 years old, mother of several children and claims to have always been well until three months before operation. Her abdomen became dropsical and so much distended that the family physician drew off, on three different occasions, two gallons of very bloody fluid, which gave temporary relief. Then he sent her in for operation. Examination revealed a large tumor in the pelvis, evidently an ovarian tumor, and a more solid and firm one in the abdomen, besides a good deal of ascitic fluid. Operation showed the abdominal tumor to be the omentum, completely solidified by carcinoma, large nodules covered the peritoneum of the walls of the abdomen and the mesentery was filled with similar hard nodules. The ascitic fluid was dark, bloody, and in amount about two gallons. Patient rallied nicely from operation but died on the fifth day.

is frequent and difficult. While the tumor starts on one side, when it grows large it will often present almost a central and symmetrical appearance. Generally, however, resonance can be secured between the tumor and the organs in the upper part of the abdomen, and its origin and attachment traced into the pelvis. Other symptoms, as backache, constipation, loss of appetite, anemia and failing strength are due to pressure symptoms and the drain upon the general health.

Prognosis.—These cases generally recover if operation is well done in time.

Treatment.—The old operation of tapping these cysts to draw off the fluid is no longer justifiable; but ovariotomy is the proper treatment when once the growth is discovered. If the tumor be very large, feed the patient up well for a week or two, remove the growth, save all the blood possible, and put a large compress and very firm roller bandage over the abdomen, put the patient to bed with the foot elevated, and give a quart of saline solution under the breasts, in the thighs and elsewhere every two to four hours. When the pedicle of the tumor becomes twisted or the tumor infected, suppuration quickly sets in and the symptoms become violent; then operation is urgently demanded, and all due precautions should be taken to avoid shock and sepsis of the wound or abdominal cavity.

(*b*) The solid ovarian tumors may be fibroid, papillomas, sarcomas or carcinomas; but they are not so common as the cysts, do not grow so large, and the benign growths may undergo malignant degeneration.

Fibroma or fibroid of the ovary may originate in the tunica albuginea or in a corpus luteum.

Etiology.—No definite cause is known.

Symptoms.—There is apt to be pain, more or less constant, and at times severe, in the region of the ovary

thus affected. There is likely to be diminished and infrequent menstruation. The growth develops slowly. Sometimes there is ascites. There may be pressure and weight from the large size of the growth, but as a rule it does not attain large dimensions. The tumor may be freely movable, or it may be firmly adherent in the pelvis to the uterus, tube and pelvic wall. Digital and bimanual examination reveals a firm, hard growth whose attachment may be found at the site of the ovary and clearly separable from the uterus. The general health is undermined just in proportion to the amount of local disturbance produced by pressure and adhesions.

Prognosis.—These cases generally recover by a careful operation done in time.

Treatment.—Electrolysis is of no value and medication, either internal or local, is useless. The only treatment at all advisable is removal by abdominal or vaginal section; usually the former.

Papilloma.—Papillary growths may develop on the surface of the ovary until the whole mass is as large as an orange, and the warty growths may even spread to surrounding parts.

Etiology.—The cause is not accurately known; but gonorrheal salpingitis has immediately preceded some cases.

Symptoms.—The symptoms do not specially differ from those given for fibroma, except here there is more apt to be ascites. The tumor may not grow as large, and it is more prone to show malignancy.

Prognosis.—Usually the cases permanently recover when operation is done early.

Treatment.—Here it is very important that there be no temporizing with electricity, massage or other remedies, but that an early and radical ovariotomy be done.

Sarcoma.—As a primary disease in the ovary this is

rare, though it may occur. Both ovaries are prone to simultaneous involvement. Sometimes an ovarian cyst becomes thus degenerated, or it may spring from a fibroid. The tumor may be small or larger than a man's head. The tumor is rather firm, not so hard as the fibroid, and is of a pink color.

Etiology.—No cause is known; but it has been found in new-born children and is apt to develop in the young.

Symptoms.—The age of the patient, a soft tumor growing rapidly, connected with the ovary, accompanied with pain, ascites, rapid loss of strength and emaciation, would lead one strongly to suspect sarcoma; and positive diagnosis would not be made until operation, possibly; but this train of symptoms should lead to immediate action.

Prognosis.—Very early operation may result in a permanent cure, and will at least give the only chance for comfort and prolonged life.

Treatment.—Early ovariotomy by abdominal section and removal of implicated parts as far as possible is the only justifiable means of dealing with these cases. The disease is much less likely to return than carcinoma.

Carcinoma.—This may occur primarily in the ovary, or secondarily by spreading to it from the uterus or other adjacent structure, although the former is more common. The primary form may begin in a perfectly healthy ovary, or it may arise in one already affected by cystoma, fibroma, or papilloma.

Etiology.—No cause is known.

Symptoms.—There is pain, amenorrhea, rather rapid growth, local peritonitis, ascites, hard nodular feel, nodules soon found in Douglas' cul-de-sac and peritoneum, and patient about middle life or past that age.

Prognosis.—These cases tend to a fatal issue, and even when operated on are likely to return.

Treatment.—Early removal by abdominal section, taking away as much of the broad ligament as possible, also tube, uterus and other tube and ovary will give the best chance of permanent relief and will at least prolong life and give comfort.

Complications.—It may be well to say here that ovarian tumors complicating a pregnancy and either so situated or so large as to interfere with delivery may and should be removed by operation as soon as discovered, and the pregnancy will generally not be disturbed. Of course, if there be any malignant growth of the ovary, it should be removed at once, regardless of the pregnancy.

CHAPTER IX

MENSTRUATION AND ITS DISORDERS

Definition.—Menstruation is that periodical flow of blood which normally occurs once a month from the uterus, and is generally dependent upon and accompanied by ovulation. It begins usually in temperate climates when the girl is about fourteen years of age, and lasts until the woman has reached about forty-five years of age. In warm climates the age of puberty is reached rather earlier, while in cold climates it is one or two years later.

Each monthly flow should last from three to five days, but in many cases apparently normal the time may be shorter or much longer. The menstrual fluid coming from the uterus contains besides blood the broken down endometrium, a part of which is denuded at each period. It also contains the secretions from the glands in the cervix. While this process should recur on an average about every twenty-eight days, sometimes it takes place a few days earlier or later in women who are perfectly healthy. At the time of a normal menstruation the uterus, tubes, ovaries, vagina and the whole pelvis are much congested, but the blood is thrown off from the endometrium alone. This being a natural and physiological process, it is not preceded, attended or followed by pain or other untoward symptoms.

DISORDERS OF MENSTRUATION

Whenever there is any marked departure from the foregoing picture it is due to a morbid process somewhere in the body and requires attention.

1. **Precocious menstruation.**—This is the occurrence of the menstrual process far too early in the life of the female. It has been known to take place in the first year of life. It is, however, a rare condition.

Etiology.—No cause is known. The parts are all prematurely developed.

Pathology.—It has no known pathology, but is doubtless caused by some unexplained prenatal influence.

Symptoms.—The more or less regular premature bloody flow from the genital tract of a girl. The development of the vulva, vagina, uterus, ovaries and mammary glands corresponding to the flow.

Prognosis.—The child may be otherwise normal and remain healthy.

Treatment.—Nothing should be done to check the flow, but the patient should be kept quiet and her strength conserved as much as possible during the periods. Any special indication arising should be met by particular means.

2. **Vicarious menstruation** is the periodical loss of blood from some other part of the body than the uterus, taking the place of or accompanying the uterine flow. The blood in such cases may occur from the nose, throat, lungs, stomach, bowels, breast, or from an open sore.

Etiology.—No cause is known, but the uterus in some cases appears to lack proper size. It is underdeveloped or probably has not sufficient nerve supply to draw the blood to the pelvis. Lack of enervation.

Pathology.—It has no known pathology.

Prognosis.—The vicarious hemorrhages may be controlled either by getting a normal menstruation established or by removing the tubes and ovaries. The first may sometimes be accomplished by prompt, early and prolonged treatment.

Treatment.—Stimulate the uterus, tubes and ovaries by daily application of the Faradic current. Under anesthesia dilate the uterus freely just before each period. Give two grains of binoxide of manganese after each meal for a week each month, beginning a few days before the expected period. The aloin, belladonna and strychnine pill every night, if the bowels will bear it, will be useful. The hot sitz bath at bedtime and hot drinks at the time of the period will assist. Outdoor exercise and such general tonics as may otherwise be indicated should have a place.

3. **Amenorrhea** is the pathological absence of menstruation.

Etiology.—Absence of uterus or ovaries may cause it. Anemia sometimes will cause it. Consumption and other chronic or acute diseases will do the same. Change of climate, scenes and exercises, as girls going off to boarding-schools. Atrophy of the ovaries or their destruction and ovarian tumors may result in cessation of ovulation, and hence of menstruation.

Pathology.—The pathology is whatever condition may be found in the blood, uterus or ovaries as suggested above, or is otherwise unknown.

Symptoms.—The fact that menstruation does not occur at the time it should may or may not cause symptoms. In the case of women who appear and feel perfectly well in spite of the fact that the period does not come on, there need be no anxiety. If any symptoms or uneasiness arise, first exclude pregnancy, see if there be anemia to account for it, change of scene or surroundings, or ovarian disease. There is no danger that amenorrhea will cause consumption or other chronic disease, but these may cause the former.

Prognosis.—The prognosis will depend upon the cause. When essential organs are absent, nothing can

be done and the prognosis is unfavorable. Where the cause can be removed, or where there is no serious constitutional trouble, it is favorable. If anemia be present, iron and pepto-mangan are indicated, as well as other tonics. Build up the general condition of the patient, but do not try specially to bring on the flow. In consumption and other diseases treat the particular disease found, and let menstruation take care of itself. In ovarian trouble treat that also, removing tumors and treating the special conditions there present. In cases of pure nervous disturbance, as in girls or women away from home, the hot sitz bath at night and hot drinks at the time the flow should appear, together with two grains binoxide of manganese after meals for a week about the same time, with an aloin pill at bedtime, will bring the flow in all such cases, if used at two or three successive periods.

4. **Suppression of menses.**—This is the sudden pathological arrest of a menstrual flow.

Etiology.—Exposure to cold or wet, sudden fright or shock may cause it.

Pathology.—There may be regurgitation of blood through the tubes into the pelvic cavity, or a greatly increased congestion of the tubes, ovaries and broad ligaments, but less blood to the endometrium. Pelvic peritonitis and oophoritis may follow.

Symptoms.—The flow stops too soon, is accompanied with pain in back, sides and pelvis, and there may be fever, rapid pulse and tenderness over the lower abdomen. Under treatment these may subside, or the case may go on to peritonitis, cellulitis and formation of abscess or chronic trouble.

Prognosis.—These cases usually recover promptly without leaving any evil effects.

Treatment.—Put the patient to bed, use hot drinks,

hot fomentations over lower abdomen and hot sitz baths, with a quick cathartic like Epsom salts. Give 1 dram of elixir cramp bark compound every three hours, quiet pain and nervousness with hyoscyamus and the bromides. These used within a few hours of the onset will usually re-establish the flow. If twenty-four or forty-eight hours have elapsed no attempt should be made in this direction. If any pelvic inflammation has developed, special attention should be directed to that. If no untoward symptoms have arisen, all will be well and normal menstruation will appear at the next period.

5. **Dysmenorrhea** (dĭs-mĕn-ō-rē′-ă).—This is painful menstruation.

Etiology.—Chronic oophoritis, stenosis of internal os or cervical canal, uterine fibroids or polypi, acute anteflexion or retroflexion. A neurotic and anemic condition may cause it.

Pathology.—Its pathology is that of the particular condition which causes the dysmenorrhea.

Symptoms.—The pains may be directly above the pubis and in the lower abdomen, in the groins, or in the back. They may be moderate or severe. Normal menstruation has no pain, and, therefore, when it becomes abnormal it may be attended by slight pain or very intense and excruciating pain. It may begin a few days before the flow occurs and continue during the entire period, or it may come on a few hours before the flow appears and cease when that is well established.

Prognosis—Dysmenorrhea is generally curable, but only where the cause can be found and removed.

Treatment.—Carefully investigate for the special cause in the case before you, and remove that. When called to a case during the attack, no critical examination is permissible, and for immediate temporary relief use hot fomentation over lower abdomen, give elixir cramp

bark compound in dram doses every four hours. Move the bowels with a hot enema. Give bromide of potash, 10 grains, in water with ten or fifteen drops tincture hyoscyamus or sulphate codein, one-half grain every hour. If pain is quite severe, and in exceptional but very rare cases, a hypodermic of sulphate morphine, one-fourth grain with sulphate atropine 1-150 grain, is allowable. The physician should insist, however, that as soon as this period is over the patient should at once begin a suitable course of treatment to prevent another such attack, for there must be some pathological condition which can and should be cured, and therefore they have no right to resort often to these powerful but temporary expedients. In young girls, catarrhal endometritis may produce a stenosis of the internal os and thus give rise to the painful menstruation. It is well in such cases to regulate the bowels, put the patient upon a tonic like elixir quinine, iron and strychnine, 1 dram after meals until five days before the expected flow, when it may be superseded by dram doses of elixir cramp bark compound until the flow is over. This line of treatment carried out for two or three months will cure many of them. Other cases due to an acute flexion of the body either backward or forward upon the cervix may so obstruct the internal os as to produce very severe pain for several hours before the flow appears. Here there is no sufficient remedy but to correct the displacement. Where painful menstruation has existed for some time as a result of stenosis, flexions or catarrhal endometritis, it almost always follows that a granular condition of the endometrium develops and adds to the severity of the case. Under these circumstances, or where the milder means have been tried in vain, a dilatation under anesthesia and a careful curettement done if necessary, are very successful measures.

The patient must be profoundly asleep, the entire canal, including the internal os, must be slowly but fully dilated to the extent of an inch and a quarter. Goodell's plan of taking from twenty to thirty minutes in very gradually securing one and one-quarter inch in the nullipara and one and one-half inch in the multipara can hardly be improved. Then run the sharp douche curette over the entire surface of the endometrium, removing all abnormal growths, including small polypi. In the last ten minutes of the dilatation turn the dilator over and throw the body of the uterus in the opposite direction to the one it occupied when you began your operation.

The proper pessary may be introduced, if indicated, after the patient recovers from the operation. This simple but most efficient operation, if well and carefully done, should be performed a few days before the flow is expected and the patient should remain quietly in bed until the flow is over. Let the patient take the cramp bark compound during this and the two following periods. This treatment properly applied will cure more cases than all others except removal of ovaries, which, of course, is only done when all other means fail and the ovaries are so hopelessly diseased as to make such an operation justifiable.

The neurotic and anemic conditions must be treated upon general principles, and oophoritis or other pelvic inflammations must be treated according to the lines laid down elsewhere.

6. **Menorrhagia** (mĕn-ō-rā′-ji-ä) is excessive menstrual flow.

7. **Metrorrhagia** (mē-tro-rā′-ji-ä) is intermenstrual flow, or a flow between the regular periods.

Since the causes, pathology, symptoms, prognosis and treatment of these two conditions are almost identical, I shall speak of them together.

Etiology.—Pelvic inflammations, subinvolution of the uterus, granular endometritis, anemia, incomplete emptying of the uterus after abortion or labor, uterine fibroids or polypi, sarcoma or carcinoma.

Pathology.—The pathology is that of the particular cause in any given case.

Symptoms.—The menstrual flow should never last long enough, be great enough or frequent enough to produce anemia or weakness; when it does it is abnormal. Whenever any woman flows longer than she is accustomed to flow and loses more blood at her period once a month than is her habit, then she has menorrhagia. Whenever a woman flows more frequently or persistently than is her wont, then she has metrorrhagia. In either case there may or may not be pain or weakness.

Prognosis.—These cases are curable or not, as the causes are removable or permanent.

Treatment.—The treatment resolves itself into primary and secondary.

a. Primary.—What shall be done in the emergency of a woman flowing too much at or between her periods? Make sure that you have a true menorrhagia or metrorrhagia and not a uterine hemorrhage from ectopic gestation or abortion, then put the patient to bed, give a hot 2 per cent carbolic douche, and internally one-half dram fluid extract ergot with one-half dram elixir cramp bark compound every three hours until the flow is checked. If the hemorrhage demands more energetic treatment still, because of its violence, put the patient in Sims' position, and with Sims' speculum raise the perineum well, and quickly wipe out the vagina with the 2 per cent carbolic acid solution; then wring out of the same solution a small pledget of absorbent cotton and with the uterine dressing forceps push it firmly up into the

cervical canal. Wring out other larger pieces and pack them firmly in front of the cervix, behind and on either side, crowding them in and filling the vagina well out to its orifice. If well and thoroughly done this will control for twenty-four hours any such hemorrhage you will ever have. After the emergency has passed you may then carefully investigate the case and get at the precise cause of the trouble and treat it according to the special indications. This dressing may be left in twenty-four or even forty-eight hours without harm or danger. It should then be removed, and after a creolin or carbolic douche, a fresh packing may be used if indicated, or the patient be subjected to the next treatment.

b. Secondary.—This will depend upon the cause. If remnants of a previous abortion or labor be retained; if there be a granular endometritis; if there be a torn cervix with subinvolution, then a good curettement is indicated, with repair of the torn parts. If there be a uterine polypus it should be tied or twisted off. Other fibroids should be removed. Carcinoma and sarcoma have their special indications as well as pelvic inflammations. Anemia should be combated with iron and tonics freely used for two or three months, and the patients always instructed to remain quiet in bed during the entire flow until they have good blood and vitality is normal.

A subinvoluted uterus will probably need a curettement. A displaced uterus should be placed and retained in its normal position. In short, the various pathological conditions found should in so far as possible be removed.

CHAPTER X

SEPSIS FOLLOWING ABORTION OR LABOR

Definition.—Any infection along the female genital tract following closely upon abortion, miscarriage, or labor, may be called "puerperal" or "childbed" fever.

Etiology.—The infection may be due to quite a variety of micro-organisms or their products, which have been introduced by unclean fingers or instruments, by patient, nurse, or other attendant. If the cervix, vagina, vulva, or perineum be torn, a fruitful field has been opened which is very prone to infection. Even when this does not occur, however, the site of the placenta or the entire endometrium, affords a most important nidus for the development of germs. From either a rapid and dangerous absorption takes place because of the rich lymphatic and blood supply. The most common germs are the staphylococcus and the streptococcus, though others sometimes gain entrance to the system through these channels and work destruction. I have seen one patient die from tetanus when the bacillus had evidently been introduced by the patient in producing an abortion upon herself with an unclean instrument. Alas, that women and physicians do not learn that these criminal practices, so directly a violation of the Divine law, are often speedily followed by dire punishment.

Symptoms.—The symptoms, of course, will vary somewhat with the kind of infection, and yet it is by no means easy to tell in every case, nor in the majority of cases, what the infection is without a bacteriological examination which too often means a dangerous delay. It is well to remember also that a woman who has just

aborted or passed through confinement is especially subject to other disease like malarial fever, typhoid fever, appendicitis, etc., so that when a woman develops fever, chills, or pain in the lower abdomen within a few days she is probably suffering from some septic trouble along the genital tract, but the fact must not be overlooked that it may be something else.

After a clean and complete abortion or labor there should be no chill nor fever, except that from the flow of milk. If there has been infection, however, there will develop fever and possibly a chill within two to four days. There may be pain in the pelvis and back. The flow is likely to be diminished, and in some cases suddenly arrested. There will be rapid pulse, headache, constipation, soreness, and tenderness over the lower abdomen. Sometimes distention of the abdomen appears early. Vaginal examination reveals a hot vagina and uterus, oftentimes a tenderness of the uterus. The fever may remit and even go below normal, but it will soon go up and the pulse increase in frequency. The pain may constantly increase, or there may not be much pain or tenderness. Of course, if peritonitis develops, or cellulitis, phlebitis, or lymphangitis, there will necessarily be pain and tenderness when these parts are pressed upon. In some cases there is no local inflammation and so little or no pain. Many times these very cases are the most severe and the results most disastrous.

A persistent or irregular fever with a pulse of greater frequency than the temperature would lead one to expect, is an indication of serious import. If there is a foul vaginal or uterine discharge it is likely to indicate the retention of part or all of the fetus or afterbirth. This demands removal, but these are not the most dangerous cases. *In the very worst cases there may be little or no discharge, and certainly no foul discharge.* Do not wait

for foul discharge, but be governed by the other symptoms, especially irregular fever and rapid pulse.

A fever with rapid pulse following abortion or labor in from two to seven days, not readily traceable to other cause or relieved by the flow of milk or freely emptying the bowels, is probably due to infection somewhere along the genital tract, and demands treatment more or less prompt and radical, according to the severity and urgency of the symptoms. As the case progresses in its ordinary course, the fever is a little higher and may be irregular, intermittent, or remittent, and sometimes subnormal. The pulse becomes more frequent and may be weaker, the pain, tenderness, and tympanitis become more marked if there is any localized inflammation. If these severe symptoms do not subside within three or four days, and the tenderness, pain, and abdominal distention increase, then a careful examination per vaginam is likely to reveal a fixed uterus with infiltration in the vault in one or both sides of the pelvis or in Douglas's cul-de-sac, and sometimes fluctuation. But even without this latter if the case has been carefully watched and this bogginess and fixation of the uterus are positively known to have occurred within a few days' time, then vaginal section is justifiable to let out the pus or bloody serum which is, under these circumstances, almost certain to become purulent.

If the case progresses unfavorably without any localized inflammation, then there is little or no pain, not much tenderness, and very little if any abdominal distention; but the fever goes higher, the pulse becomes unusually rapid and wiry, the tongue is dry, the lochia less or purulent and foul, the raw surfaces in the perineum, vulva, vagina, and uterus are covered with a grayish membrane, and are rather sensitive and tender to the touch. A few days later the constipation may

give way to diarrhœa, then may come tympanitis, sweating, chills, etc.

Prognosis.—The cases which go from bad to worse, either with treatment or without it, usually die in from one to six weeks. The most severe types, of course, show bad symptoms from the very first, especially the frequent pulse, and will likely die within a week of the onset of the disease if not promptly and radically treated, while the other types may linger along for weeks, gradually wearing out the patient and sapping her vitality until the disease is arrested by nature or proper treatment or death closes the scene.

Treatment.—It is very important to remember that while there is a very rare case now and then in which an old chronic tubal or ovarian trouble may give rise to the infection which produces "childbed" fever, still the cases are generally produced by infection carried to the raw surfaces by unclean instruments or fingers. Hence the importance of prophylaxis.

Prophylaxis.—Let the physician and the patient as well as nurse or attendant understand the significance of surgical cleanliness, then carry it out in a rational, intelligent manner, and these cases will be few and far between. Let the physician who is attending cases of scarlet fever, diphtheria, erysipelas, or other acute contagious diseases refrain from visiting abortion or labor cases unless he takes some reasonable precautions against carrying infection to his patient. Of course the more thorough and complete these precautions are the more certain are they to be effective, and yet it is absolute folly and a waste of time and strength to lay down a lot of impractical rules which, however complete in themselves, when applied theoretically or in a well-equipped maternity hospital are yet too cumbersome and visionary to arrest the attention or gain the intelligent assent

of the ordinary practitioner. Such teaching does more harm than good. But if the more rational, simple, and practical methods of cleanliness are urged, there is hope of getting positively beneficial results. It would be well, then, and practical for the physician who has on hand any case of acute infection or contagion and is called to an abortion or labor case, to have a change of outer clothing or a clean gown to slip on before he goes into the patient's room. He should have also his sleeves well rolled up, the hands and arms thoroughly scrubbed with soap and an abundance of hot water. There is absolutely no substitute for this as a mechanical means in most cases. Then wash well with alcohol, and having pared and cleaned the nails, wash them thoroughly in 3 per cent carbolic solution. Of course if this cleansing is well done several times there can be little or no danger of such a hand carrying infection into the vagina, and yet the examinations should be as infrequent as possible. The vulva should also be cleansed in all cases before the examination is made, or infection may be carried in from this point unwittingly.

It is unnecessary and unwise as a rule to use vaginal douches of any kind before an accidental abortion or normal labor unless there is some special reason for so doing. If the physician has not been in contact for three or four weeks with infectious material or disease then the change of clothing and gown, as well as the repeated washing of the hands are not really essential, but the proper cleansing of the vulva, and the thorough going over the hands with soap and hot water, alcohol and carbolic solution are important. The vulva may be well prepared and easily by going over it with the Green soap and hot water, then the carbolic solution.

Neither the patient nor nurse should put their hands or fingers about the vulva and vagina until they have

been as thoroughly cleansed as those of the physician. No instrument, tube, catheter, or syringe nozzle should be introduced into the vagina until it has been properly sterilized and the vulva properly cleansed.

Delivery or abortion having occurred, all torn places in the vagina, vulva, and perineum should be at once repaired as a preventive measure.

Curative treatment.—Having made a diagnosis that the case is one of infection along the genital canal, see to it at once that the uterus is completely emptied of all afterbirth and debris. Use the clean finger first, then the sharp curette and a sterilized uterine douche; also clean off all raw surfaces in cervix, vagina, vulva, and perineum with the same valuable instrument and douche freely with sterile water. If the symptoms are at all severe, and especially if there is a rapid pulse, wipe out the whole inside of the uterus and all raw surfaces just mentioned, with pure carbolic acid. While applying to the endometrium you may protect the vaginal walls by tucking absorbent cotton about the cervix to catch the surplus as it escapes from the external os, then remove the cotton and touch all of these raw surfaces freely with the acid and wash away the excess with sterile water.

Now put the patient to bed and let a hot carbolized water or creolin vaginal douche be used two or three times a day, but do not use any intra-uterine douches or packing.

If your work has been well done you may now leave the uterus alone, do not tamper with it. Empty the bowels with mercurials and salines. Give sulphate of quinine, 3 grains in capsule every two hours. Give tincture chloride of iron, 10 grains in water after each capsule. Give nourishing diet and even egg-nog, milk punch, or hot beef tea may be required every three or four hours. Sometimes the ice-bag, hot water-bag, or

hot turpentine stupes over the abdomen will give decided relief. The really essential thing is to get the uterus thoroughly emptied and cleansed out early, and have it and all raw surfaces freely gone over with the carbolic acid.

If acute suppuration occurs in the cul-de-sac, the tubes, the ovaries, or the broad ligaments open freely through the vagina as advised elsewhere, but do not open the abdomen. If the uterus becomes widely septic or filled with foci of suppuration, remove it through the vagina, but not by abdominal section.

CHAPTER XI

PELVIC INFLAMMATIONS

Pelvic peritonitis and **pelvic cellulitis.**—I shall discuss these inflammations together, merely pointing out the distinctions in symptoms and treatment when such exist, for the very good reason that they are generally associated in all of the acute forms and it is the exceptional case that is chiefly one or the other. These inflammations may be either acute or chronic. The chronic form usually follows the acute, except there are numerous cases of peritonitis which are chronic from the beginning.

Etiology.—Both acute varieties of inflammation may follow abortion or labor, operation upon the uterus as curettement or repairing a torn cervix, or the introduction into the uterus of any unclean instrument, the sudden arrest of the menstrual flow by cold or sexual intercourse. It is true that the sepsis which follows close upon abortion or labor is more apt to produce cellulitis or phlegmon in the cellular tissue, while gonorrheal infection which spreads through the uterus and tubes is more apt to develop a peritonitis. A ruptured tubal pregnancy is apt to develop a peritonitis rather than cellulitis. All acute tubal and ovarian inflammations are prone to develop peritonitis rather than cellulitis. Chronic peritonitis develops from the acute varieties or from chronic metritis, chronic endometritis, the infection by tubercular bacillus, and from chronic inflammations of tube or ovary. Where there is a chronic peritonitis or cellulitis, an acute inflammation may readily be excited by any manipulations of or operations upon the uterus,

as probing, curetting, inserting pessaries, etc., or by undue exposure at the time of menstruation. This will easily explain some cases which the general practitioner meets with in his ordinary practice and cannot understand why, with his simple treatment of the case, these severe attacks of inflammation should occur.

Symptoms.—In the acute cases you may often get a fairly good history pointing to the cause directly. There will be pain, fever, increased pulse rate, soreness and tenderness over lower abdomen, tympanites, pain in back going down the thighs, headache, loss of appetite, and constipated bowels at first. There may be nausea and vomiting. There may be one or more pronounced chills or chilly sensations and sweating. Combined vaginal and abdominal examination will reveal a distended abdomen with rigid muscles and more or less increased pain upon pressure. The fingers in the vagina will discover the cervix congested, softened, more or less fixed, pain severe upon attempting to lift the uterus, the vault of the vagina hard, board-like and very tender; or there may be great fullness upon one side or the other or behind the uterus, while the opposite side is free. The uterus may be pushed to the other side of the pelvis by the enlargement in the inflamed side, or it may be crowded upward and forward. Of course if there be a retrodisplacement the body will be found well down in the cul-de-sac. A finger in the rectum will sometimes more clearly reveal the exact condition than the finger in the vagina.

ACUTE

PELVIC PERITONITIS	PELVIC CELLULITIS
Gives history of gonorrhea.	Gives history of recent abortion or labor.
Suppressio menses.	Operations on uterus.
Use of unclean instruments.	Some tympanites.
Improper use of pessaries.	Tenderness and rigid muscles of abdomen, more marked on one side.
Pain and general tenderness over lower abdomen; great tympanites.	Uterus not so firmly fixed.
Uterus fixed and very tender.	Pain, tenderness and rigid vaginal vault, mostly confined to one side.
Vaginal vault board-like and same on both sides.	
Frequent and painful urination.	

Chills, fever and sweating may take place in both, especially if pus develops, but is most likely to occur in cellulitis.

Pelvic abscess.—This term of course may be used to denote the formation of pus anywhere in the pelvis, whether in the tube, ovary, Douglas' cul-de-sac, broad ligament, or the ischio-rectal fossa; but as some of these have names of their own I think it better to use the term more particularly in reference to those of the broad ligament and cul-de-sac. We may, however, admit that it is not always possible to make a positive diagnosis at the bedside just where the pus is located. Given, then, a case with the symptoms already enumerated for pelvic peritonitis and cellulitis, namely, pain, tenderness, fever, tympanites, fixed uterus, hard, boggy or fluctuating vaginal vault posteriorly or on one side, chills and fever with sweating after the acute trouble has lasted for five to seven days, giving a history of recent abortion or labor, supressio menses, gonorrhea, or any traumatism to the uterus, and a pelvic abscess may be safely said to exist. It is well to remember that fluctuation is often a very late symptom and need not be waited for. The other indications are absolutely reliable if the history can be depended upon, and the patient has gradually

grown worse for a week. In such cases pus will always be found if looked for in the right place.

Prognosis.—Speaking in general terms, the prognosis is good if these cases are properly treated. By neglect, inattention and delay, some of them die, and many are made chronic invalids.

Treatment.—In the very beginning of either peritonitis or cellulitis, put the patient to bed if she is not

FIG. 70. (OPENING A PELVIC ABSCESS.)

a, First assistant holding traction forceps.
b, Second assistant holding Sims' speculum.
c, Two fingers of operator's left hand pulling down perineum.
d, Scissors in right hand pushed into abscess.

already there, empty the bowels thoroughly with calomel, 2 or 4 grains, and soda bicarbonate, 5 or 10 grains, followed in two hours with Epsom or Rochelle salts or a Seidlitz powder. Put the ice or hot water-bag over the lower abdomen, use hot vaginal douches, one or two gallons, every three hours. Small doses of phenacetine, 3 to 5 grains, may be given for pain and fever every three or four hours, and a two-grain opium rectal suppository once or twice a day if required for pain. Enemas to keep the lower bowel empty may be used daily after

having them well unloaded by mercurials as already advised. The patient should have two or three grains of sulphate of quinine in capsule three or four times a day, and the food should be nourishing and abundant as well as easy to digest. Milk, beef tea, soup, broth, toast, and even milk-punch or egg-nogg may be required.

If the patient does not within three or four days promptly mend upon this line of treatment, or if having improved there suddenly comes on a chill or high temperature, dropping down to normal or even below, the formation of pus should be suspected and careful examination made to locate it. Do not expect fluctuation, but hardness or bogginess with great tenderness and fixation of the uterus and fullness behind the uterus on one or both sides. If this condition has certainly developed within ten days, careful exploration will evacuate pus.

The proper method in all such cases is to place the patient in the dorsal position under an anesthetic with the vulva and vagina well cleansed; have an assistant hold up the anterior wall with a Sims' speculum and hold the cervix firmly with a traction forceps; the operator puts two fingers into the vagina and presses the posterior wall and perineum well out of the way; he then takes a long pair of sharp-pointed scissors, curved on the flat, and pushes them, closed, directly up into Douglas' cul-de-sac just back of the cervix, and then carries the point to either one side or the other wherever the mass may be and pushes it steadily on into that mass. He now separates the handles, thus spreading the points of the blades, and withdraws the scissors, when a flow of abundant pus will reward his effort. If the opening in the vaginal vault is not considered free enough, this may now be further enlarged either by cutting the vault in either direction with the scissors, or more safely by putting in

the uterine dressing forceps and forcibly spreading them as they are withdrawn. The steps of this operation are shown in Fig. 70, the last showing the scissors well spread and the pus flowing freely over the operator's hand. The finger may now be introduced into the cavity to see that all partitions are broken down and that the sac is well emptied. It should be well washed out with sterile water and two rubber drainage tubes as large as a man's little finger introduced to the depth of the cavity and allowed to project almost to the vaginal orifice. A strip of iodoform gauze should be tucked along the side of the tubes well into the cavity and then into the vagina to keep them from being expelled during straining. A pad and T-bandage must be applied and the patient put to bed. This dressing should be left for forty-eight hours, when it may be removed and the cavity well irrigated through the tubes and a smaller piece of gauze reinserted. The dressing may now be changed daily or every second day; in four or five days, when the discharge is small in amount, one of the tubes may be permanently removed; after a week or ten days the discharge will probably be so slight that the other tube may also be taken out and a vaginal douche once or twice a day will be all that is required. No definite rule can be given for this further than to say that the tube is intended to provide drainage and keep the wound in the vaginal vault from closing before the abscess cavity has closed, but after that has occurred the tube should be removed, and this takes place in from seven to fourteen days. The bowels should be moved daily with suitable laxatives, and the patient kept in bed for a few days after the tube is removed. It should not be forgotten that if this abscess has followed abortion or labor, the uterus should be thoroughly cleaned out and carbolized before the abscess is opened. Then, too, before plunging the scis-

sors into the cul-de-sac, locate the uterine body with the fingers or sound to see that it is not in the way. If it should be down and adherent in Douglas' pouch, the scissors may still be pushed through the vaginal vault in the median line, but you would not go so deeply as if the mass were inflammatory and not uterus, but having gone just through the thickness of the vaginal wall you would then turn the point to the side in which the pus and inflammatory exudate are located.

Chronic pelvic peritonitis and cellulitis. — *Etiology and pathology.*—In the acute cases where no pus is found resolution may take place, the exudate may be largely, if not entirely, absorbed, when pain and tenderness will disappear. Oftentimes, however, part of the inflammatory product becomes organized into adhesive bands or tissue which thickens and cripples the ligaments, binding or pulling the parts out of their normal position or preventing their normal mobility. Thus the uterus, the tubes and the ovaries are surrounded by adhesive bands which hold them so firmly as wholly to destroy their function. The uterus may be retroverted or retroflexed and held immovably by these adhesions. The Fallopian tubes may be prolapsed alongside of or behind the uterus, their fimbriated extremities entirely sealed over by inflammatory exudate which has become organized into a fibrous membrane. A similar process may go on with the ovaries until they become so completely enveloped by adhesive bands binding them to the tubes or uterus or the pelvic walls or the bottom of the cul-de-sac that they undergo a degenerative process and are entirely destroyed. With each monthly period the trouble is apt to become more aggravated and an acute attack is always more easily excited than under normal conditions. Sometimes the chronic form of pelvic peritonitis results from chronic metritis or endometritis and is not preceded

by the acute variety, and yet these same changes occur, the adhesion bands forming just as firmly and the parts being held in unusual and abnormal positions and their function being as completely destroyed as if the most severe acute form had been its cause.

Symptoms.—For some unaccountable reason cases of this character may go on for years without giving rise to any symptoms pointing to the pelvic organs. Such cases may have reflex trouble, as indigestion, pain in the stomach, pain in the back of the head or upon the top of the head. They are apt to be irritable or nervous. In fact all nervous and other symptoms not otherwise explained should lead the careful observer to investigate the pelvic organs for these results of chronic inflammation or other disturbances of the uterus or its adnexa. However, it is very often true that a chain of symptoms point to these conditions in the pelvis, the usual ones being as follows: Pain in the back and sides, much increased before and during the menstruation which may be excessive; constipation may exist and piles are not uncommon; leucorrhœa also is likely to be present. Bimanual examination will now reveal the uterus more or less firmly fixed, rather tender, pain much increased if the attempt be made to elevate this organ. The uterus will be somewhat enlarged. The tubes and ovaries will be thickened, tender, more or less prolapsed, and fixed in their abnormal positions. With the patient in the knee-chest position, it will still be found that the organs cannot be put into their usual locations, and that an effort to thus place them greatly increases the pain. These are the cases where pessaries are liable to do harm and where acute inflammations may be excited. It should be said that in some cases the uterus is movable and in normal position while the tubes and ovaries are out of place and adherent; or the adhesive bands may

yield somewhat and under pressure or position permit a certain mobility of uterus and its adnexa, and yet not allow them to be put in their normal positions.

Treatment.—Where these conditions exist and give rise to any symptoms, either direct or reflex, they demand immediate attention. If the symptoms are not severe or urgent, a certain amount of relief and palliation may always be obtained by regulating the bowels, using the iodine and dry tampon with the patient in the knee-chest position as already advised under the head of retroflexions. Fly-blisters in the groins over the region of the ovaries, tonics and alteratives are always beneficial. Where the conditions are not sufficiently relieved by this line of treatment, or where the symptoms are serious, then either a vaginal hysterectomy or an abdominal section to properly suspend the uterus, break up adhesions and remove or resect the tubes and ovaries will be demanded. Here each case is a law unto itself.

CHAPTER XII

LEUCORRHOEA

Definition.—Any whitish or yellowish discharge escaping from the vagina or vulva is called "leucorrhoea" or "whites." Normally the vulva and vagina are moist, but there is no perceptible accumulation on the walls of the vagina nor upon the vulva, neither is there soiling of the female linen by it. When any of these conditions occur there is present more or less leucorrhoea. The amount of such discharge varies, from the slightest excess of the normal secretions about these parts, to so great a flow as to require the wearing of a napkin.

Etiology.—Leucorrhoea is a symptom and not a disease, and only deserves special consideration because it is often the one thing of which the patient complains, and to the lay mind it is the disease, and it alone needs treatment.

Catarrhal or specific vulvitis and vaginitis, erosions of the cervix, endocervicitis and endometritis are usually the diseases which give rise to this symptom. For a full account of these diseases the reader is referred to what is said concerning them in the preceding pages.

Treatment.—When this is the principal thing of which the patient complains, it may often be relieved by cleanliness, astringent douches, tonics and regulation of the bowels. The catarrhal varieties often require building up of the general health more than anything else. In young girls particularly is this true, and if they should have dysmenorrhea as well, then rest at the time of menstruation, with elixir of cramp bark compound, 1 dram three times a day for a week about the time of

each period for two or three months, with apenta water, one glassful each morning upon rising, to get a good bowel movement, or Apollinaris water in the same way. In lieu of these, half a dram of Epsom or Rochelle salts in a glass of water the first thing every morning will do wonders for them. Between the periods in anemic cases let them take tincture of chloride of iron, 10 or 15 drops in water after meals, or Gray's glycerine tonic, 1 dram after meals and at bedtime. If an astringent wash be required, sulphate of zinc or acetate of lead, 5 or 6 grains in a pint of hot water at bedtime, will be useful and efficient. In other cases a vaginal suppository containing 3 or 5 grains of tannin or boric acid or acetanilid or phenacetine may be introduced at bedtime and a hot douche taken in the morning. In yet other cases where there is erosion of the cervix, introduce the speculum and apply five grains of dry tannin about the cervix and a tampon to hold it in apposition, then have a hot douche used the following morning and repeat the application every second or third day. Or apply Monsel's solution in the same way. Nitrate of silver solution, 40 or 60 grains to the ounce, may be used in like manner. If there is much heavy granulation material about the cervix, an application of equal parts of tincture of iodine and carbolic acid once a week, or once in two weeks, will often make the other applications more effective. When the discharge is very thick and comes especially from the cervical canal, this should be moderately dilated with the Hank's steel dilators, the secretion removed with the uterine syringe, and the applications made with the swab. The iron, silver and iodine carbolic solutions above mentioned will be useful. Any small cysts which form about the cervix must be punctured, the contents evacuated and the base touched with the carbolic acid. When the discharge comes from the

endometrium, dilate the cervical canal and the internal os in like manner and apply Churchill's iodine, tincture of chloride of iron, nitrate silver solution, or even Monsel's solution.

In some obstinate cases an anesthetic must be given, the uterus and cervical canal thoroughly scraped out with a sharp curette, and tincture of iodine freely applied, and the patient kept quietly in bed for a week, taking fluid extract of ergot, 1 dram, three times a day. Of course where there is a torn cervix, a large uterus or other pathologic condition, these must be corrected as already advised. In all cases the constitutional treatment, regulation of the bowels, care at the menstrual periods, simple cleanliness and building up the general health must not be neglected.

CHAPTER XIII

EXTRAUTERINE PREGNANCY

Recently, in less than three months' time, I have seen five cases of extrauterine pregnancy; and this, with some former experiences, leads me to believe the trouble a far more common one than we generally admit, and one which should be understood as far as possible by all physicians, that the diagnosis may be made early, and the patients given the benefit of the best treatment which that knowledge can suggest.

This affection has been recognized for many years, but until recently was thought to be of great rarity. The work of Tait demonstrated it to be of more frequent occurrence than previously had been believed. A wider experience by many competent observers has shown it to be all too common, and has thus pressed home upon the profession the great importance of giving the subject close and careful attention. Hence, along with the advances made in other departments of medicine during recent years, much has been done to make it possible for the wide-awake and progressive practitioner to arrive at a correct diagnosis and to suggest the proper treatment.

As to the varieties of extrauterine pregnancy, there are usually said to be four: (1) Interstitial, or implantation and growth of the ovum in the tube as it is contained in the uterine wall; (2) tubal, or implantation and growth of the ovum in the tube anywhere from the place it leaves the uterus to its fimbriated extremity; (3) ovarian, or implantation and growth of the ovum upon the ovary; (4) abdominal, or implantation and growth of the ovum at any place within the peritoneal cavity.

Of all these varieties the tubal is most common. Ovarian pregnancy has been denied many times, but several well-authenticated cases have been reported, until now most observers admit its existence. The following case, recently reported by Tussenbroeck, is so much like one reported by myself in 1898 that I will give it here:

"A woman, 31 years old, mother of five children, who had always been well, suddenly became ill and showed pronounced symptoms of internal hemorrhage. She had not menstruated for six weeks; otherwise she had no symptoms of pregnancy. Diagnosis, ruptured ectopic gestation; indication, immediate laparotomy. Upon opening the abdomen large quantities of fluid and coagulated blood were found. The patient was placed in the Trendelenburg position, whereupon the following conditions were noted: Uterus soft, somewhat enlarged; left adnexa normal, right tube normal; right ovary capped by a tumor about the size of a walnut, and covered with coagulated blood. The tumor was not adherent to the tube or other organs. The right tube and ovary were removed. She made a good recovery. The specimen was hardened in alcohol; it consists of the right tube and ovary. The tube is normal, although the fimbriæ are slightly adherent, its lumen open. Pathological adhesions between tube and ovary were not found. As mentioned before, upon the upper surface of the ovary is situated a small tumor, in the center of which is an opening with fringe-like projections. Transverse section of ovary and tumor shows that the tumor represents a cavity containing a small embryo, with a relatively thick cord to the wall of the sac. This observation proves conclusively that this case is a primary ovarian pregnancy, the product of pregnancy being situated within a Graafian follicle. The fetal placental struc-

tures are identical with the normal intrauterine placenta. The villi have the irregular form of early pregnancy, and are covered with two epithelial layers of cells. The fact that the synctium was typical proves that this structure is of fetal origin, and not formed from the tubal or uterine epithelium."

Etiology.—When we come to speak of the causes for these abnormal and dangerous conditions, we are obliged to confess that we are still in the dark, and cannot account satisfactorily for their occurrence. The theory that possibly a diverticulum in the tube of congenital origin prevents the fecundated ovule from passing along the tube into the uterus by deflecting it into this blind channel whence it cannot emerge and so begins to develop there, seems to be quite untenable for several reasons, chief among which is the fact that many of the patients are mothers of several children, and it seems improbable that they could have gone through pregnancy safely so many times if this little diverticulum of such dangerous possibilities had constantly been present. The theory that appeals to me most strongly is that some obstruction has occurred in the tube from previous disease, and that while the spermatozoa may with difficulty pass through it on account of its small size and because of its own motive power, yet when the fecundated ovum, a larger body, and without the power of motion, attempts to traverse this narrow way, it finds itself arrested, and must needs develop where it is. Now this obstruction may be a flexure in the tube, a thickening of its mucous membrane, or possibly the complete removal of the epithelium with its ciliated processes, upon which in part the ovum must depend for its change of location. After all, however, we must admit that no one knows why these accidents occur, and it will be extremely difficult in the very nature of the case to ever demonstrate the cause.

Symptoms.—As to the symptoms, they are the ordinary ones of pregnancy, until rupture takes place, which may occur any time after the fifth week up to the fourth month. Very rarely is the physician called to see and examine one of these early cases before rupture. Patients usually have gone over their period six or eight days or three or four weeks, and may or may not suspect that they are pregnant, when suddenly, without warning, they are seized with a severe griping pain in one or the other ovarian region and lower abdomen. They feel faint or sick, must lie down and get something for relief. They may sweat rather freely, a cold, clammy sweat breaking out over the body. There may be some pressure and "bearing down," as they will express it. A digital examination at this first attack will reveal a soft cervix, a tumor, large or small, at one side or other of the uterus, with free pulsations of a uterine artery, a fluctuating mass of greater or less size in Douglas' pouch, and tenderness upon the side of the tumor. The pulse will be more rapid and weaker than natural. A rectal examination may demonstrate more clearly the tumor and the fluctuation. Within twelve or twenty-four hours a very dark, bloody discharge flows from the uterus, and later possibly a characteristic membranous formation, the decidua. If the pregnancy is not far advanced, these symptoms subside, pain becomes relieved, soreness gets better, but the bloody discharge continues. After a few days or weeks these severe symptoms are repeated in a more or less violent manner. Unless the hemorrhage is quite profuse into the pelvic and abdominal cavities, the patient again rallies in a few days, to have later a still more serious attack; when finally she dies from a profuse internal hemorrhage and only a moderate uterine flow, or she develops a peritonitis, or a pelvic abscess which evacuates itself or is

relieved by the surgeon. It is sometimes said that these accidents occur in women who know themselves to have suffered for years with some pelvic trouble. But I wish to call attention to the fact that while this is probably true in the majority of cases, still it will not do to depend entirely on this statement, for at least two of these five recent cases did not suspect that they had any female trouble whatever. Again, it is sometimes urged, and wisely, I think, that these cases occur in women who have borne children, and then without any known cause have gone several years without becoming pregnant. But two of the five cases were in women with babes at the breast less than a year old, and one had never been pregnant.

One symptom that I have noticed, which so far as I know has not been mentioned, is the peculiar dark color of the discharge that comes from the uterus. This has appeared to me to be almost characteristic. At least, so prominent has it become in my estimation that if a woman with such a discharge gives a history of having gone a few days or a few weeks over her time, and is suddenly taken with severe and unusual pain in one ovarian region, I do not hesitate to pronounce the case one of ruptured tubal pregnancy. The other symptoms and physical signs are readily associated with these, and the treatment has demonstrated the correctness of the diagnosis. I am convinced, therefore, that every physician should be on the alert for the three cardinal symptoms which will guide him to a proper interpretation of other evidences in the case, even though he be not an expert in determining pelvic conditions by digital explorations. This I deem to be of very great importance, for at times neither the fluctuations nor the pelvic tumor are palpable to the ordinary finger.

If, then, a physician meets with a case where these

three cardinal symptoms are present, (*a*) suspected pregnancy, (*b*) sudden severe cramps in pelvis, and (*c*) very dark bloody uterine discharge, I believe he is in duty bound to treat it as one of ruptured tubal pregnancy. Of course other symptoms generally are present which will tend to confirm such a diagnosis; but if not, these alone are a safe guide and should lead at once to appropriate active treatment. It is always well to remember that we can settle the diagnosis positively by a simple operation, namely, vaginal section, which will disclose the blood-clots, fluid blood and membranes, or demonstrate their absence.

Treatment.—When we come to speak of the treatment of these cases, there are, of course, differences of opinion; but I think we should not tie ourselves down to any ironclad rules from which we will not swerve, but should treat each case according to its particular merits. If the hemorrhage is in abeyance, or if the case has developed a fever with temperature over 100, I prefer to make a free vaginal incision, turn out the blood clots and debris, wash out thoroughly and drain, much as I would a pelvic abscess. However, I am persuaded that a man should not do this in any case unless he has prepared his patient, and is himself prepared to quickly open the abdomen and treat the conditions which may unexpectedly arise. On the other hand, if the hemorrhage is still progressing, unless the operator be peculiarly expert in vaginal work he will do better to at once open the abdomen and control the bleeding-point. Having made an abdominal section and controlled the bleeding, the diseased tube and ovary should be removed, and the other side dealt with according to its deserts. Then all blood-clots and debris should be quickly removed, the entire cavity wiped dry and clean with gauze sponges, and possibly drainage established through

the vagina, after which the abdominal wound may be carefully closed in the usual manner. If there has been great shock or loss of much blood, the patient should receive before leaving the table a quart of normal salt solution underneath the breasts. This should be repeated in the thighs and abdomen every two to four hours until the patient has fully rallied.

CHAPTER XIV

URETHRA AND BLADDER

Anatomy.—The female urethra is a canal one to one and a half inches in length, extending from the bladder to just below the center of the vestibule, where its external opening, the meatus urinarius, is found. The canal is slightly curved as it passes under the symphysis pubis, being slightly depressed by that bone. It is one-fourth to one-half of an inch in diameter, and somewhat easily distended. It is really imbedded in the anterior wall of the vagina, and yet has an external layer of circular muscular fibers, an inner one of longitudinal fibers, and is lined with mucous membrane which normally is thrown into longitudinal folds.

On the floor of the urethral canal and just inside the meatus are the mouths of two canals half an inch long and large enough to admit a small probe; these are known as Skene's glands or urethral ducts. They are of interest only when they become infected and give rise to some unusual swelling or even to accumulation of pus and require to be laid open before the inflammation can be permanently cured. Its vessels, nerves and lymphatics are the same as of the vagina.

The female bladder is a hollow, musculo-membranous organ situated between the pubic bones and lower abdominal wall in front and the vagina and uterus behind. When empty its walls lie in contact and the entire bladder then is in the true pelvis. It is capable of great distention, sometimes holding three quarts of urine. When distended it has an ovoid shape and may extend as high as the umbilicus. It may be divided into

a summit, that part to which the urachus is attached, the base, the lowest part of the bladder, and the trigone, that part represented by a triangular surface between the openings of the two ureters and the urethra. The bladder has an outer or external coat, the peritoneum beneath, which is considerable connective tissue, then it has a muscular coat, and last the internal or mucous. But between these last two, except in the trigone, there is a distinct submucous layer. It may be well to remember that the peritoneum does not cover the anterior surface of the bladder nor that posterior part which is so intimately connected with the uterus and vagina. Its blood supply comes from the internal iliac, its nerve from the hypogastric plexus and sacral, while its lymphatics go to the iliac glands.

Malformations.—The malformations of these parts have already been considered under those of the vulva and vagina, and will need no further attention here.

Diseases.—Urethritis and irritable caruncle have been discussed in connection with the diseases of the vulva, and it only remains to say in relation to inflammations of the urethra in the female, that on account of the shortness of the canal and its free dilatation, giving abundance of water to drink and alkaline diuretics to flush out the canal usually results in prompt relief. If not, the whole canal may be swabbed out with a solution of nitrate of silver, 20 to 40 grains to the ounce, every three or four days until it is cured; or if Skene's glands become seriously involved they must be slit open with a fine knife and their surfaces touched with the above solution.

Prolapse of the urethra or of the mucous membrane is not an uncommon condition and must be distinguished from caruncle. It is caused by persistent and long-continued straining, as from constipation, and produces

frequent micturition, which is its most prominent and annoying symptom. Upon inspecting the parts a protrusion of mucous membrane at the meatus will be apparent. There will be a complete ring instead of a small tumor, whose base of attachment is limited to the posterior margin of the meatus, and the color will be pale or dark instead of bright red like the caruncle. It will not be tender or sensitive to the touch as is the latter.

The *treatment* is to pull the membrane well down and cut it off all the way around and unite the margins accurately with fine catgut, and then have the urine drawn with a small soft catheter every six hours for four days, when healing will be complete.

Cystitis or inflammation of the bladder may be either acute or chronic.

Etiology.—It may be caused by cold, uterine displacements, septic infection, gonorrhea or stone.

Symptoms.—The symptoms of the acute variety are frequent and painful urination, also pain at the close of the act; soreness and tenderness over the bladder and by vaginal examination. There will be fever and rapid pulse, and may be one or more chills in the beginning. Soon there appears a mucous or mucopurulent sediment in the urine, which will be highly alkaline. In the chronic form, which usually follows the acute, there will be frequent and painful micturition and little or no fever. Deposits of pus and phosphates will occur in the urine, which will have a foul odor. The pain upon pressure will be less marked than in the acute. Inspection of the bladder with the cystoscope (Fig. 73) will reveal a reddened and thickened condition of the mucous membrane. The bladder will be much contracted and many times will hold only three or four ounces of urine, when it should be able to hold from ten to sixteen without much inconvenience.

Treatment.—Determine the cause if possible and remove that. In the acute form put the patient to bed, apply ice over the bladder, empty the bowels with salines, have the patient drink abundantly of water that the urine may be bland, dilute and non-irritating. Give citrate of potash, 10 grains, and tincture of belladonna, 4 drops, in water every three or four hours. Five grains of phenacetine every four or five hours will reduce

FIG. 73.

Making cystoscopic examination of bladder, patient anesthetized, and head of table lowered so that hips are elevated ten inches or more. Electric light is not shown.

the fever and allay pain. Sulphate of codein, one-half grain, or elixir of triple bromides, 1 ounce, every two hours, may be required for pain. At night it may in rare cases be wise to give an opium suppository of two grains by rectum. In some cases it is best to wash out the bladder thoroughly once a day with large quantities of sterile water and then with hot saturated boric acid solution. In the chronic forms, if not tubercular, the bladder may be washed out daily with this solution, but in addition, once or twice a week it is well to inject into the bladder 1 dram of a solution of nitrate of silver, 20 to 40 grains to the ounce, and after allowing it to remain a few minutes it may be washed out with sterile salt solu-

tion, or in some cases that have proven obstinate, the solution may be left in the bladder, the patient put to bed, and an ice-bag applied for a few hours. Build the patient up, get her in as good physical condition as possible. Urotropin, 5 to 8 grains in water three or four times a day, is a very useful remedy in some cases. The washing out of the bladder with 1 per cent creolin or 3 per cent carbolic solution may be tried in certain cases.

If the case be tubercular, which can be told only by finding the bacillus in the scrapings from the bladder or in the urine when the ureters and kidneys are excluded, then not much can be expected from local treatment, and dependence must be put upon cleanliness and change of climate. In severe and long-standing cases not cured by the above measures, we may successfully resort to vaginal cystotomy, by which the bladder is put at rest and drained for from four to eight weeks, when it will be found to have regained a healthy membrane.

Stone in the bladder is not so common in girls and women as in boys and men, still it does occur, and is sometimes found to be the cause of incontinence of urine. It may produce all of the symptoms of a cystitis; pain most severe at close of urination, sudden stoppage of the stream, and pain with sometimes a little blood. Vaginal examination may locate the stone in the bladder and sounding for it will find it. The crushing operation or litholopaxy may rarely be justifiable when the stone is too large to be extracted safely through a dilated urethra, and yet not so large as to demand a cystotomy. Generally, however, it is better to do a vaginal or even a suprapubic cystotomy and drain for a time to cure the cystitis.

Neoplasms. — Papillomatous and even malignant growths of the bladder sometimes, though rarely, occur. The former may be suspected by slight hemorrhages in

one not likely to have cancer, and the cystoscope will reveal their size, location and severity. Under an anesthetic they should be thoroughly scraped away, either through the urethra or by an opening in the bladder through the vaginal wall. The latter or malignant growths offer no encouragement as yet.

Contracted bladder may either follow a chronic cystitis or may come on from what is popularly called irritable bladder, that is, a condition in which, although there is no perceptible inflammation either from pressure of uterus or other part upon the bladder, it will not retain more than one to four ounces of urine, when the patient is rendered so uncomfortable by its pressure that she must evacuate the bladder at once, being awakened out of sleep two or three times in one night. Here it is important to build up a rundown general condition, for such patients are often irritable, anemic, sleepless, nervous, etc. Give tincture of nux vomica, 5 drops, and tincture of belladonna, 5 drops, in water three times a day, increasing the belladonna one drop each day until the constitutional effects are secured. See to it that the urine is non-irritating, then wash out the bladder with boric acid solution, and gradually each day distend the bladder with a larger quantity of the water until it can hold a pint easily, then use the distention twice a week, then once a week, then once in two weeks, until in a little time, three or four months, your patient will be well.

CHAPTER XV

CONSTITUTIONAL DISEASES

1. Chlorosis (klō-rō′-sĭs).
2. Hysteria.
3. Neurasthenia (nū-răs-thē-nī′-ā).
4. Insanity.

1. **Chlorosis.**—A peculiar form of anemia occurring in young women in their early menstrual life. Called also "Green Sickness," from the peculiar pallor of their skin during its continuance.

Etiology.—Its cause is not known, but since it occurs only in young women beginning their ovulation, it is supposed to be dependent upon some disturbance in this process.

Pathology.—The blood corpuscles are diminished, the proteids of the plasma are increased, and the gravity of the plasma is higher than normal. The hemoglobin is diminished.

Symptoms.—Paleness; weakness; shortness of breath; indigestion and other gastric disturbances; smooth, plump skin out of all proportion to the apparent illness. The hemic murmurs, with the history and blood examinations, will settle the diagnosis in doubtful cases.

Prognosis.—Under suitable treatment these cases usually recover.

Treatment.—Iron given in as large doses as the patient can bear is the most useful drug. Blaud's pill at least three times a day, accompanied with peptomangam, 1 or 2 drams in a half-ounce of port wine, after meals. This may be profitably alternated with tincture chloride of iron, 10 or 15 drops in water after meals.

The bowels should be kept active with aloin, belladonna and strychnine pills, or an occasional saline will be beneficial. Stomachics, digestants, and sometimes bitter tonics will assist materially in hastening the cure. If there be menorrhagia, the patient should be kept in bed during menstruation, but at other times outdoor life is helpful.

2. **Hysteria.**—*Definition.*—A disorder with nervous manifestations, not dependent upon any known pathologic condition.

Etiology.—It is most commonly found in those of neurotic temperament, whose nervous energy is below par, but no specific or particular cause is known.

Pathology.—It has no known pathology.

Symptoms.—Patient easily excited, may laugh or cry inordinately, may have apparent fainting spells, coma or convulsions, tonic or clonic spasms. It will be observed that these patients never fall in such a way as to hurt themselves, and though apparently unconscious, really observe all that goes on about them. Pulse and temperature absolutely normal. Repeated hysterical attacks more or less frequent.

Prognosis.—Such patients never die in an attack, but are not easily permanently cured. They sometimes recover completely.

Treatment.—The very best treatment is nerve tonics and moral suasion. Bring the patient's volition into play by firmly antagonizing her whims. Do not allow her sympathy, and let her realize fully that there is no organic trouble present and that you know she can control these spells if she only will. These are people upon whom the so-called Christian Scientists work so successfully. It is the physician's place to cure these cases by the above means, and as an aid, Fellows's compound syrup of the hypophosphites, in dram doses three times

a day, will be useful in some cases, as will cod liver oil in others. A hypodermic of apomorphine in some bad attacks will promptly arrest them.

3. **Neurasthenia.**—*Definition.*—That neurotic condition resulting from nervous debility or exhaustion, in which local disease in the pelvis or elsewhere is unduly magnified.

Etiology.—Prolonged worry or anxiety, profound shock to the nervous system in one susceptible to this disorder. It may occur in both men and women, but is much more common in the latter during the child-bearing period. Idleness, lack of ambition, unhappiness from any cause are important factors.

Pathology.—Its pathology is not known. Whatever pathological conditions are found in certain organs or parts, they do not make up the pathology of this disease, but are only factors in its course, for if it have a pathology, and no doubt such will eventually come to light, it must be in the nerve centers.

Symptoms.—Sleeplessness is common. Patient is irritable and nervous. Fears that some dread disease is upon her, or that she may go insane. Is weak, listless, talks of herself and her ailments, magnifies her aches and pains, is apathetic and lacks energy or ambition. There are digestive disturbances; as flatulence, oppression in stomach after eating, and constipation. Hysterical attacks may, or may not, supervene. The above symptoms, with a history to account for the nervous exhaustion, or a diseased condition of some organ sufficient to account for it, will make the diagnosis clear.

Prognosis.—Many such cases can be cured. Probably all could be if treated properly early in their course.

Treatment.—Remove as far as possible all pathologic conditions of whatever organ or part. Correct the digestive disturbances by regulation of diet, time and

manner of eating. The food should be readily digested, nourishing, well masticated, and of reasonable variety, and crowded to the utmost. Secure abundance of sleep for the patient. Massage, baths, electricity, and in most cases out-of-door exercise will be very beneficial. Get the patient interested in doing something useful for some one else, both indoors and out of doors, thus getting her mind off her own ailments, but do not overtax her mind, strength or energies. It is well not to depend much upon drugs, still some drugs wisely administered are important and helpful. Sulfonal in doses of 15 to 25 grains in a glass of hot milk at 7 P. M. will often give refreshing sleep. Chloretone, in doses of 10 to 15 grains at bedtime, will produce a happy effect. Trional, codein, tincture hyoscyamus or elixir pentabromides will do nicely in some cases. Essence of pepsin, in dram doses after meals, will often aid digestion materially. Small teaspoonful of sodium phosphate in a glass of water the first thing every morning will assist in getting a natural action from the bowels daily. In some cases it may be necessary to use beef, wine and iron, the prepared foods, and even to remove the patient from her surroundings and from the presence of over-sympathetic friends. A change of climate or sea voyage may be useful. In a few severe types, the Weir Mitchell treatment may be required, summarized as follows:

1. Absolute rest in bed and proper sleep.
2. Forced feeding.
3. Seclusion.
4. Electricity, massage and baths.

4. **Insanity.**—I shall not discuss the subject further than to call attention to it, which in my opinion it deserves from the standpoint of the gynecologist. You will search in vain through all of our standard works upon gynecology for any adequate discussion of the subject

of insanity in women caused by or associated with pelvic disease, while in fact most of them ignore it. Even the works upon mental diseases give it little more than a passing notice. It is true that Skene's last work gives a fairly creditable chapter upon the subject, and Kelly quotes at some length, without comment, from Rohé; yet these certainly do not give a fair and full presentation of the facts as I believe later works will do. The question has been more liberally discussed in the journals and in medical societies, and this bids fair eventually to bring us to a just estimate of the true relations between insanity in women and pelvic diseases. Since alienists themselves do not agree as to what insanity is, nor upon a clinical classification of its various forms, I will not attempt to define the former or endeavor to elucidate the latter.

In the spring and summer of 1898 I read a paper before the Omaha and Nebraska State Medical Societies upon the subject, and reported three cases. Although the papers were kindly received, most of my medical friends did not seem to appreciate the importance of the subject, or its wide significance. I find, too, that although many in the profession are giving thought and attention to this line of work, the vast majority of the profession do not realize what I believe to be a fact, namely, that a large proportion of all insane women have some pelvic disturbance as an important if not a chief causative factor; and further, of those who do in a measure appreciate the mutual relations of these troubles, most are not alive to the importance of early and radical treatment. To put it differently: Those cases not improved by operative or other local measures were not helped, either because the local attention was not given early enough, or was not thorough enough, rather than that local attention was not demanded. Let me remind

you of Morel's statement, that "Although the brain is always the seat of insanity, it is not always the seat of its cause"; and of Kohlberger's, "The source of mental diseases is not only in the brain itself, but in all the organs"; and of More-Madden's, "That cerebral disease is not always traceable in cases of insanity. A large proportion of cases of mental disease in female patients is due either to disordered menstruation with tubal and ovarian irritation, or to puerperal causes, for by the direct removal of these causes I have been able to restore to mental and physical health patients previously confined in asylums." Kraemer says: "Of three hundred castrations for insanity, two hundred were benefited, while in one hundred it was doubtful or unfavorable." Skene says: "I take it for granted that all will agree that insanity is often caused by diseases of the procreative organs. An acute disease of the ovary or uterus, or a displacement of either, is sufficient to cause mental derangement in some highly sensitive organizations which will subside when the disease of the pelvic organ is relieved. Such cases are no doubt reflex in character, but there are a great many more cases of insanity that can be traced to the sexual organs in which reflex action takes no part. Take, for example, cases of uterine disease preceding by an interval of years the mental derangement which follows without any increase of the primary disease. In such cases it is probable that impaired nutrition of the brain, which occurs as a result of prolonged suffering, is the direct cause of insanity, and not the result of reflex action from the disease of the sexual organs."

In the Journal of the American Medical Association for October 12, 1895, Dr. George H. Rohé, of the Maryland Hospital for the Insane, gives the results of operations upon 34 insane women as follows: 14 women

were cured mentally and physically, 5 were improved, 12 unimproved, and 3 died. In summing up his experience in these cases, he says: "The number of my cases is too small to allow me to draw any conclusions, but if anything of practical value can be deduced from them, it is that puerperal insanity, melancholia and simple mania offer the best chances of cure from the proper treatment of local lesions in the pelvis. Of course it may be said that these forms of mental disorder are those which yield in the majority of cases to the usual methods of management of insanity. In seven of the cases, however, the insanity had lasted over eighteen months before any treatment directed to the local lesion had been instituted. In a case of hystero-epilepsy the patient had been in the hospital seven years, and one of the cases of puerperal insanity had been four and one-half years insane. I am convinced that earlier operation in appropriate cases would very largely increase the proportion of recoveries."

Dr. W. P. Manton of Detroit, who has had rather a large experience among the insane, said, in 1896: "We long ago came to the conclusion that the idea of restoring the sick mind to health as the result of gynecological operative interference should be abandoned." And yet, paradoxically enough, he also says: "I have never operated on an insane woman yet, no matter to what extent dementia has gone on, without some relief to the mental condition, and a decided improvement in the personal comfort of the patient."

I cannot but be somewhat surprised at one of the deductions at which Howard A. Kelly arrives in his most excellent text-book on gynecology, when he rather advises against abdominal or pelvic operations in women who have shown evidences of melancholia or insanity, lest the operation precipitate mental derangement, using

the following language: "A most marked predisposition exists in women who previously have been melancholy and insane, and any patient with this blot in her history should be operated upon only in case of urgent necessity, and with the fullest explanation to the family as to the risk incurred." For in such cases, having carefully explained to the friends the dangers, I should urge whatever operation was necessary to restore the patient to health, believing that I was thereby doing the very best thing possible to avert permanent insanity as well as to restore her to health.

Dr. A. T. Hobbs, of the London Asylum in Ontario, presented a valuable paper upon this subject, which appeared in the January number of the Journal of the American Medical Association. With the consulting gynecologist, Dr. Meek, he carefully and systematically examined 220 women confined in the asylum, and found 188 of them, or 85 per cent, suffering from some pelvic lesion. They proceeded to operate according to modern methods upon 173 of these unfortunates, and their report is that 42 per cent recovered mentally, 24 per cent were mentally improved, 2 per cent died, and only 32 per cent remained mentally the same. It is interesting to note that none were made worse mentally. While we have here a distinct and noteworthy improvement in 66 per cent of the cases, we should remember that many of the cases had been neglected entirely for from six to sixteen years. and further, that in many the operations done were, in my opinion, too conservative and not at times sufficiently radical to reap the full benefit that might have been obtained. The doctor in his paper says very truly, I think, in summing up his conclusions: "From this comparison we deduce the fact that organic lesions of the inflammatory type are the most prominent factors among pelvic diseases in exciting mental aliena-

tion." Granting this to be true, suppose you have a lacerated cervix, a subinvoluted, misplaced uterus with endometritis of two or three years' standing. Now if by conservative measures you cure these conditions, in the majority of cases you may still have left a subtle disease of the ovaries not relieved, which will be an important factor in preventing mental health. For Skene truly says: "The diagnosis of ovarian diseases—obscure at all times—is most difficult among the insane. The absence of tenderness is almost always marked. Patients rarely complain of being hurt by examination or treatment." So that every operator knows that there may be serious disease of the ovaries not clearly made out until these organs are brought into view. And yet, again, I am persuaded that there is some reflex influence from the uterus and other pelvic structures outside of the tubes and ovaries, which produces a positive effect upon the nervous system not yet appreciated. A case in point is one given by Rohé, in which the uterine appendages were removed without benefit; but when a vaginal hysterectomy was done later, the patient was restored to physical and mental health.

Since the experience of any one man is too limited to justify scientific deductions upon a subject so fraught with difficulties, it is essential that a large number of observations be made by different investigators, and these data brought to the attention of the profession from time to time, until by the consensus of a sufficiently enlarged experience we can arrive at the truth and give to humanity the relief which our honored profession is destined to afford.

My own cases, in which I have given this feature special study, have been limited to sixteen. Of these 10 were cured, 3 were improved, 2 were no better, and 1 died. I am convinced, however, by experience that

all of these could have been cured by early and more thorough work. In all cases of insanity in women I am sure a careful and thorough pelvic examination should be made, and all abnormal conditions removed as an important curative measure. *But far more important than this is the fact that if the general practitioner will insist upon his female patients having their pelvic disorders corrected by whatever means are necessary, many cases of insanity will be prevented. Prevention here is vastly better than cure.*

It will not be amiss in this connection to remind you that numerous reflex disorders arise from disturbances in the pelvis. Severe headaches, pain in the top or in the back of the head may be relieved sometimes by correcting a displaced uterus or by removing an ovarian or other pelvic tumor.

Nausea and vomiting or gastralgia may occasionally be due to a retroflexed uterus, a prolapsed ovary, or other pathologic pelvic condition. No satisfactory explanation has yet been given as to why so many painful or annoying troubles located in remote parts of the body are relieved only by correcting abnormal conditions in the female pelvis, and yet the universal experience of the profession so often shows a causative relation between them, and cure can be effected in no other way, that we call them reflex, and urge physicians to investigate these organs for pathologic conditions in all those disorders or symptoms not clearly traceable to other cause or causes.

CHAPTER XVI

OPERATIONS

Some general remarks may be made concerning operations of both minor and major character in connection with gynecology, and I shall therefore briefly consider the following:

1. **Dilatation.**—This is one of the minor operations, and can be safely done by any physician who will take the time and pains to prepare for it. It is an operation needed in stenosis of the internal os, or of the cervical canal or preliminary to a curettement. If there has been a dysmenorrhea due to the tight canal or os, a wider and more slow dilatation is required than otherwise. Of course the use of Hank's dilators is in a sense a minor operation, and not only should the parts be clean, but the instruments should be sterile as well. Having been boiled just before their use they may be dipped into carbolized vaseline previous to their insertion into the canal. But I am now speaking more particularly of the wider dilatation in which an anesthetic will be necessary. The instruments required are a Sims' speculum, uterine sound, dressing forceps, Pean's traction forceps, a pair of light and one of heavy dilators. They should all be washed clean with soap and hot water, then boiled for at least ten minutes in a covered vessel with a teaspoonful of common baking soda to a quart of water.

The patient being under the anesthetic, she is now brought with her hips well to the edge of the bed or table and laid in the dorsal position with hips on the Morrison pad (Fig. 14), the feet and legs supported by

an assistant on either side. The vulva should be well washed with abundance of hot water and soap, then the vagina well scrubbed in like manner, and this all followed with a plentiful washing with bichloride 1:2000 or carbolic 3 per cent solution. The thorough use of soap and hot water with sterile brush or gauze is more reliable than anything else, but the antiseptic washes do no harm, and if well used do some good; but it is not wise

FIG. 74.

Patient under anesthetic, operator and assistants all ready for abdominal section.

to put too much dependence upon these. The hands of the one who does this scrubbing, as well as those of the operator, should be rendered as nearly sterile as possible by use of a sterile nail brush, soap and hot water well and persistently used, having two or three changes of the water; then they should be put through a bichloride solution, 1:1000, sterile water, then rinsed in alcohol.

Hands thus prepared, the nails having been cut short and cleansed with pen-knife between the courses of washing in the basins of water, will be clean enough for any operation. Provided, however, that after one's hands have been in contact with any known violent infection, they should be finally put through a solution of permanganate of potash until they are stained dark brown, then through a hot saturated solution of oxalic acid until this brown stain wholly disappears, and finally rinsed in sterile water. The Sims' speculum is now introduced and held by an assistant, whose hands must be clean, while the operator with two fingers pulls down the perineum and grasps the anterior lip of the cervix with Pean's forceps, introduces the sound to get the direction of the uterine canal and then with the small dilator gradually, but gently and continuously, introduces it through the cervical canal and beyond the internal os, making sufficient dilatation to allow the use of the heavy dilators, when the larger pair are used and a slow dilatation is made. Here the thumb-screw may satisfactorily be used, and by taking from twenty to thirty minutes to secure one and one-fourth or one and one-half inch dilatation the result is more certain to be lasting in its effects. By keeping the shoulder of the dilator well up against the external os there is less danger of the points slipping and tearing through the cervix laterally. Then, too, by this means you may turn the dilators over during the last half of the dilatation and thus throw the body of the uterus in the opposite direction from which it was in the beginning of your operation if this should be found necessary, as it is where there has been a flexion of long standing. If by some misfortune the cervix should be much torn, and especially if the circular artery be lacerated, you should have a cervix needle at hand threaded with good catgut and a good needleholder. When this

is introduced deeply, you may surround the artery and bring the torn surfaces together so as to control the hemorrhage and unite the parts at the same time.

2. **Curettement.**—This is a minor operation done with ease and perfect safety if the operator will prepare to so do it. I have, however, known of several deaths from it, and numerous cases of chronic pelvic trouble because it was not carefully done. It is therefore very

FIG. 75.

Patient in Trendelenberg position, abdomen opened, adhesions broken up, tube and ovarian abcess lifted into wound ready for removal.

important for the practitioner to appreciate the dangers of the operation, the true indications for the operation, and the details of the proper operation, and then no competent man is likely to do harm by it, but may accomplish great good, and cure what would without it be incurable.

Dangers.—Sepsis, from unclean hands or instruments, or from interfering with old pus tubes or pelvic adhesions or perforating the uterus.

Indications.—Catarrhal, granular, septic, specific or other forms of endometritis, metritis mucous or fibroid polypi, uterine fibroids or suspected malignant disease of the body, may all call for a curettement.

Proper method.—The additional instruments needed to those given for dilatation are sharp curette and uterine irrigator attached to a sterile fountain syringe, or the curette may properly be a hollow one so that irrigation may go on constantly during the operation. The patient must be carefully prepared, the instruments and hands of operator (and assistants who are to touch any of the instruments, gauze, cotton or other dressings) must all be fully prepared as given above. In this case it is really much more important than in the preceding that thorough preparation be thus made. Then having accomplished the dilatation as already indicated so that the curette may easily be introduced, pass it gently up to the fundus while the water from the fountain syringe flows through it, thus washing out the cervical canal and uterine cavity before any scraping is done. The exact location of the fundus should be determined before the curette is introduced so that you may intelligently pass it gently, surely and safely. If the uterus is acutely septic, the greatest care must be used in thus getting the depth of the uterus and outlining the sphere for your manipulations. If large pieces of fetus or afterbirth remain, these should all be removed first by the finger and then the instrument introduced as advised. Having gotten the depth of the uterus and found accurately the dimensions to be gone over, the sterile water, creolin or carbolic solution constantly flowing, then go over the entire inner wall of the uterus in a systematic way so that fundus, anterior, posterior, lateral walls and corners of the uterine cavity shall be clean of all its tissue which you desire to remove.

If there be healthy uterine wall, it has a firm, gritty feel under the curette which can better be felt than described. Although a uterus just emptied of the product of conception is softer than one not so, still even here there is a firmness and hardness different from the unhealthy tissue which you wish to remove, and so your curette must be kept going until the work is properly accomplished. Remember the danger of penetrating the uterine wall is as you push the instrument in rather than when you scrape firmly in pulling it out, so that really the danger of penetrating the wall is no greater with the sharp than with the dull curette. So watch your movement as you push the curette and do not go further than the bounds you have already carefully mapped out. Having gone over the walls and washed out the cavity with the sterile water or antiseptic solution, your curettement is over. Now whatever applications you desire to make of Churchill's iodine, or equal parts of iodine and carbolic acid, or the pure acid or solution of nitrate of silver, 40 or 60 grains to the ounce, may be made after protecting the vagina with sterile cotton or gauze tucked about the cervix, and the surplus washed away with sterile water, when your patient may be put to bed.

After a curettement your patient should always be kept quietly in bed for at least a week, and in some cases longer.

3. **Opening a pelvic abscess,** 4, **Trachelorrhaphy,** and 5, **Perineorraphy.**—The preparation for these operations should be careful and thorough, after the manner given for the preceding operations. I prefer to use the long, sharp-pointed scissors, curved on the flat, for opening pelvic abscesses, and after irrigating the cavity wall I leave in one or two large drainage tubes and a little gauze slipped into the cavity alongside of them to con-

trol the oozing of blood and prevent the tubes coming away too soon.

In making preparation for a trachelorrhaphy, but especially perineorraphy, I like to have the parts about the anus, perineum, and as much as necessary of the vulva shaved to keep the hair entirely out of the way, both during the operation and the healing process. In the operation for complete laceration of the perineum, it is well to put the patient upon conservative but reasonable diet, and move the bowels thoroughly each day for a week in order to be sure that no hard, scybalous masses are left to tear open your wound after the work has been well done.

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